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ANIMAL ASSISTED THERAPY – IMPACT ON HUMAN HEALTH AND FUTURE PROSPECTS

Abstracts

HETI ETHICAL GUIDELINES AND RESEARCH JOURNAL

Věra Lantelme-Faisan

The Federation of Horses in Education and Therapy International (HETI)

Corresponding author: president@hetifederation.org

The Federation of Horses in Education and Therapy International (HETI) is committed to advancing ethical standards and fostering research within the Equine Assisted Services (EAS) field. The HETI Ethical Guidelines, published in 2020 and edited in 2023, outline essential principles for service providers, such as "Do No Harm", respect, integrity, competence, and accountability. Additionally, these guidelines emphasise equine welfare, detailing provisions such as good nutrition, environment, health, appropriate behaviour, and positive mental experiences, based on Mellor's framework (2016). Translated into several languages, the guidelines are designed to be accessible to an international audience.

Complementing this ethical framework, the HETI Journal: International Research and Practice serves as a platform for scholarly exchange and professional development. Since its re-establishment of a double-blind peer review process in 2012, the journal has become the longest-running publication dedicated to EAS (since 1994), featuring categories for original research, case studies, and theoretical discussions. This journal not only fosters a culture of evidence-based practice but also actively engages practitioners in ongoing research collaborations. The recently developed HETI Research Task Force further underscores this commitment by promoting rigorous research that aligns with HETI's mission to enhance service quality and equine welfare globally.

Keywords: equine Assisted Services, ethical guidelines, research, equine welfare, HETI Journal.

Acknowledgements: HETI Ethics Task Force and HETI Research Task Force.

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THE CONCEPT OF INTEREST IN MORAL STATUS ASCRIPTIONS – A REEVALUATION

John-Stewart Gordon[1,2]

[1]*University of Tübingen, IZEW, Germany, Vytautas Magnus University, Lithuania,*
[2]*Academy of International Affairs NRW in Bonn, Germany*

Corresponding author: johnstgordon@pm.me

This paper reevaluates the concept of "interest" in moral status ascriptions, focusing on non-human animals. Most moral philosophers assert that entities with a moral status have *interests* that matter morally for their own sake. However, this paper argues that applyi ng the concept of "interest" to non-human animals is misleading and constitutes a categorical mistake. Higher-order reasoning and self-awareness, essential for having interests, are typically lacking in non-human animals. The paper critiques contemporary approaches, suggesting a reevaluation and reframing of theories to avoid anthropomorphism. It proposes using universally applicable terms like the capacity to feel pain or suffer (or sapience), rather than interests, to determine moral status.

Keywords: moral status, interests, higher-order reasoning, non-human animals, anthropomorphism, sentience.

EVALUATION SYSTEM OF EQUINES TAKING PART IN EQUINE ASSISTED SERVISES (EVASE) – INTELECTUAL OUTPUTS ERASMUS+ 2020-1-CZ01-KA204-078277

Lina Šarkienė[1], **Helena Costa**[2]

[1]*Member of Horse Riding Association of People with Disabilities, European Equine Assisted Therapy Network, Lithuania*
[2]*Member of The Kids Fellows Association and board member of SPSAE Association, Portugal*

Corresponding author: vera@hipoterapie-kurzy.com

The project focuses on standardised criteria and guidelines for selecting equines in equine assisted services (EAS) in the European Union (EU). Six European partner organisations (**Česká** hiporehabilitační společnost, z.s. (Czech Republic) – project coordinator, Nevsehir Hacı Bektaş Veli University (Türkiye), Neįgaliųjų jojimo asociacija (Lithuania), The Kids Fellows-Research Group in Anthrozoology (Portugal), Proyecto Caballo (Spain), Suomen Ratsastusterapeutit Ry (Finland)) have developed EvaSE through the Erasmus+ project with the intention of helping to establish consistent standards across EAS programmes and organisations, ensuring a reliable and uniform approach to equine selection and preparation.

In Europe, there is no uniform (or generally identical) system of preparation and evaluation of equines participating in EAS. The project thus responds to a current need for ensuring the safe training and welfare of equines included in EAS, including methods of evaluating their suitability. In the EU, there is a need for more specialists to carry out special training and preparation of equines for this purpose. Equines are currently being trained in various ways, which may lead to welfare problems and variety in the quality of EAS. We aimed to share knowledge and experiences of partner organisations and develop a document that all partners have approved.

The effectiveness of EAS relies on the suitability of equines. An evaluation system can help to identify equines with the desired attributes, such as adequate temperament, suitable size, and appropriate preparation, which are crucial for facilitating positive interactions and achieving goals. Proper evaluation allows us to select the most suitable equines and enhance the programme's quality and efficacy, leading to better participant outcomes.

The creation of EvaSE has improved our competencies in the selection and preparation of the equines. It represents a significant milestone in the advancement of EAS standardisation. It can be applied as a comprehensive guide for EAS centers and practitioners, providing necessary tools to create evaluation procedures that prioritise equine welfare, safety, and the promotion of best practices.

Keywords: equines, evaluation, EAS.

Acknowledgments: Thanks to the project administrator – the Czech Hyporehabilitation Association – for the opportunity to participate in such a project! Thank you to foreign colleagues for your beautiful friendship and sharing your knowledge!

ONE HEALTH: "ENSURING CANINE AND HUMAN HEALTH: VETERINARY PROTOCOLS FOR DOGS IN ANIMAL-ASSISTED INTERVENTIONS"

Scarzi Massimo

DVM IAA Expert, Centro Veterinario Scarzi, Genoa, Italy

Corresponding author: veterinario.genova@gmail.com

This presentation delves into the concept of One Health [1], a holistic approach recognising the interconnectedness of human, animal, and environmental health. The importance of addressing global health challenges, like emerging infectious diseases and climate change, through a One Health lens [2,7]. The presentation introduces novel topics such as the microbiota and antibiotic resistance [3, 4] and proposes a valuable protocol for Animal-Assisted Interventions (AAI) [5, 6]. By examining successful One Health projects and emphasizing interdisciplinary collaboration, this presentation underscores the critical role of One Health in fostering a healthier and more sustainable future [8–15].

Keywords: holistic, globalisation, antibiotic resistance, *microbiota,* AAI (Animal-Assisted Interventions).

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FROM BEDRIDDEN TO BAR MITZVAH: BRINGING LARRY BACK TO LIFE. A DOCUMENTARY BY JARED STEIN

Steven Puzarne

Rayor Family Center of Loving Kindness, Tsipori, Israel

Corresponding author: spuzarne@gmail.com

Larry Pearlman was born blind and faced severe physical and emotional challenges. By his late 50s, he had fallen into a near vegetative state, finding minimal motivation to get out of bed each day, as his immune system predictably and dangerously weakened due to his immobility. Nothing seemed to help until his cousin Cantor Steve Puzarne brought his dog Emma for the first of many visits. The transformation was instantaneous, remarkable, and life affirming. Within a short time, Larry transitioned from being debilitated and despondent to becoming fully ambulatory for the first time in years, and joyfully celebrating his adult Bar Mitzvah just prior to his 60th birthday. The profound bond that developed between Larry and Emma was instrumental in Larry's emotional and physical recovery. This experience highlighted for Steve the incredible impact animals can have on human healing.

A SYSTEMIC APPROACH TO ANIMAL-ASSISTED INTERVENTIONS. ETHICAL IMPLICATIONS

Franco Manti

Department of Education Sciences, University of Genova, Genova, Italy

Corresponding author: franco.manti@unige.it

Animal-assisted interventions (AAI) involve the generation of a complex relational system setting the outcome of the interaction between humans (operators and intervention recipients), animals employed and the places where the interventions are carried out. The combination of these factors forms an open system characterised by feedback effects between the setting and its context. Therefore, when designing and implementing an AAI, it is necessary to keep in mind some fundamental factors: the relevance of the cultural dimension in the definition of human-animal relations; the incidence of ethological, psychological, biological knowledge with regard to the definition of correct interspecific relations; sentience as an expression of the cognitive capacities of animals [1]; the generation of well-being [2] for all those who participate, human or animal, in the intervention. This has ethical implications based on the recognition of the equal value of humans and animals. It entails the team taking responsibility for protecting the health and well-being of all assisted intervention participants including animals. It is, in short, a matter of affirming a principle of justice whereby the recognition of the equal inherent value of animals, human and non-human, is substantiated by ensuring a condition of well-being for all. Zooanthropology [3] makes it possible to interpret the role of the animal in the relational process, considering it, in the context of AAI, as participating in socio-relational structures and capable of implementing transactions and events that can be correlated or investigated through the role variables (transaction directrixes). Transaction is possible according to the principle of recognisability.

The specificity of the transaction between humans and animals lies in their asymmetry and non-complementarity: the animal is totally other. Taking otherness seriously means: assuming incommensurability as the basis of the transactional relationship, eschewing both the humanisation and the reification of animals; avoiding the projection of the animal in the 'dark mirror' in which the limits, incapabilities and vices of humans appear in animal guise [4]; considering animals as active subjects of transaction; assuming that, given sentience, the animal is capable of fulfilling a role, of communicating new content, of questioning human projections onto it. We thus have to deal with paths of recognition: the reciprocal one between the operators and the recipient of the intervention, that of the latter towards the animal and that of the animal towards humans. It should, however, be borne in mind that while the recognition performed by humans is attributive, that of animals is not, since it is essentially physical and therefore non-judgmental. Recognition processes are fundamental in the construction of the setting and, as far as humans are concerned, make it possible to avoid reification of the animal and projectivity (i.e., considering the animal as functional to the symbolic redefinition or surrogate use of inter-human relations). The transactional relationship between humans and animals is not 'in the order of things.' Firstly, a biographical approach is necessary with regard to both the recipients of the intervention and the animals. Furthermore, the animal must desire interaction and be able to reciprocate with humans, and actively and subjectively interpret the relationship. Preparing the animal for the relationship implies assuming the following responsibilities: taking into account the species-specific educational needs; enhancing the abilities and aptitudes of the individual animal within the relationship; enriching the relational experience by enhancing socialisation with humans; identifying clear and recognisable relationship rules oriented towards reciprocation, exchange and collaboration. On this basis, it is possible to think of ethics of interspecific care that generates well-being, together, for humans and animals.

Keywords: ethics, otherness, recognition, system, transactional relationship.

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THE IMPACT OF HUMAN-HORSE INTERACTIONS ON PHYSICAL AND EMOTIONAL WELLBEING

Rūta Šveistienė[1], Alfonsas Vainoras[2], Kristina Berškienė[3], Mantas Landauskas[4]

[1]Animal Science Institute, Lithuanian University of Health Sciences, Lithuania
[2]Institute of Cardiology, Lithuanian University of Health Sciences, Lithuania
[3]Faculty of Nursing, Lithuanian University of Health Sciences, Lithuania
[4]Kaunas University of Technology, Lithuania

Corresponding author: ruta.sveistiene@lsmu.lt

For centuries, people have discussed the special bond between humans and horses, with research indicating that interacting with horses can improve both psychological and physiological well-being [1, 2]. Scientific studies have explored these interactions, revealing that activities such as grooming and riding horses not only foster emotional connection but also lead to measurable health benefits: reductions in systolic blood pressure and improvements in emotional well-being following interactions with horses [3].

The objective of this study was to compare heart rate, blood pressure, and bio-psychosocial satisfaction between non-riders and riders during daily activities and interactions with a horse. The study involved 22 participants, divided into two groups: 15 non-riders with an average age of 27.4 years, and 7 riders with an average age of 26.3 years. Measurements included 24-hour heart rate monitoring, blood pressure, bio-psychosocial satisfaction assessments, and evaluations of physical activities of varying intensities. Interactions with the horse, such as flattering, brushing, feeding, and riding, were also assessed. Data were analyzed using the Pearson correlation, the Mann-Whitney test, and the Wilcoxon test through SPSS and MATLAB.

The results showed that non-riders had a higher heart rate compared with riders during horse interactions. For example, the non-riders' median heart rate was 93.5 beats per minute while flattering, 97.5 beats per minute while brushing, and 100.5 beats per minute while feeding the horse. In contrast, the riders' median heart rates during these activities were significantly lower, with 77 beats per minute during flattering, 85 beats per minute during brushing, and 84 beats per minute during feeding. In the non-riders' group, the physical condition after the sessions with the horse increased more than the emotional state ($P < 0.05$). HR was higher when non-riders were flattering, brushing and feeding the horse compared with the low and medium daily physical activity ($P < 0.05$). The non-riders' systolic blood pressure decreased and satisfaction of emotional well-being and social interaction increased ($P < 0.05$) after sessions with a horse.

In conclusion, there were no significant differences in blood pressure or bio-psychosocial satisfaction between the two groups before interacting with the horse. However, non-riders experienced a higher heart rate during flattering, brushing, and feeding compared with riders. Additionally, non-riders showed a greater improvement in the physical condition after the sessions, while both groups reported increased emotional well-being and social satisfaction after interacting with the horse.

Keywords: heart rate monitoring, blood pressure, bio-psychosocial satisfaction, horse, rider, non-rider.

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ELDERLY PEOPLE AND THEIR RELATIONSHIP WITH ANIMALS: THE CURRENT SITUATION

Sonia Carla Ricciu

Azienda Sanitaria Locale 3; Archi Pet association; Genovese, Genoa, Italy

Corresponding author: soniacarla1@yahoo.it

The aging of the population is a challenge for the health of the world. In 2030, more than 24% of the European population will be over 65. Currently, in Italy, there are more than 14 million people over 65 years of age, out of approximately 59 million [1].

Half of the people over 65 in Italy own at least one pet, with a continuously growing trend. Among them, 20% are diabetic and 54% are hypertensive. In most cases, pets are either dogs (51.6%) or cats (33.3%). 78.7% of those who have a dog take it out every day, and 71.4% play with their cat every day. For 70% of elderly people, the company of their four-legged friend influences both physical and mental well-being and is essential for accompanying the last years of life [2].

Those who have a dog are therefore fitter and biologically appear ten years younger. Owners over 65 years old are responsible owners: they are attentive to veterinary care and constant care. For people who live alone the dog is essential company. Dog owners do 57% more physical activity than non-dog owners, which translates into long walks greatly improving health.

According to estimates, in fact, walking an average for one hour and forty minutes a day would have various implications: 432 000 diabetics with fewer complications, a reduction in the incidence of cardiovascular diseases (by –7%), besides psychological aspects like greater self-esteem (+6%) and a lower incidence of depression (–5.73%). Owning a pet, together with correct nutrition, can bring annual savings for the national health service because of the reduced demand for hospitalisations linked to various pathologies, which would be around 2.7 billion per year.

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EFFECTS OF ALPACA THERAPY ON CHILDREN WITH AUTISM SPECTRUM DISORDER

Viktorija Jenciūtė[1], Gintarė Tarvydavičienė[2], Daiva Mockevičienė[1]

[1]Klaipėda University, Lithuania
[2]Čiobrelių rojus, Lithuania

Corresponding author: jenciuteviktorija@gmail.com

Animal interventions are becoming increasingly popular for the treatment of autism spectrum disorder symptomology (ASD). However, there is a lack of information regarding which animal and animal-specific factors provide the most advantageous therapeutic benefits to address ASD symptoms effectively. Some of the primary assisted therapies are dolphin therapy, canitherapy and hippotherapy. This type of therapy is generally used to help manage psychosocial (emotional and behavioural problems), cognitive (e.g., effects associated with traumatic brain injury), and physical (e.g., pain) symptoms. It is increasingly used to support children with ASD and other neurodevelopmental disabilities and delays (NDD) [1]. Alpaca therapy is a new concept, but it is quite popular in Germany and Chile and has been practised for some time in Peru's Sacred Valley of the Incas. It can be successfully used as an adjunctive treatment for patients suffering from neurosis, depression, anxiety disorders and mental illness, as well as for children with ADHD, autism or cerebral palsy. This study examines the neurosensomotorics and psychosocial behaviour of children with ASD using alpaca therapy.

Keywords: alpaca therapy, autism spectrum disorder, ASD, children.

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PERSPECTIVES OF EQUINE ASSISTED THERAPY FROM THE EUROPEAN NETWORK

Nona Dane[1], **Carlos Hernandez**[2]

[1] *Chair of the Association of Chartered Physiotherapists in Equine Activities*
[2]*Equibility Malta*

Corresponding author: carlos.hi@outlook.com

The European Equine Assisted Therapy Network (EEATN) is a collaborative platform for associations and practitioners engaged in Equine Assisted Therapy (EAT) across Europe [1]. On this platform, inspiration for learning and sharing through open-minded collaboration is encouraged. Any professional is invited to join this multidisciplinary network, but they must agree to be proactive, attend meetings and join one of the specialised subgroups. Our members consist of thirty-two therapists from sixteen countries, working in eight different disciplines. The Network's aims are to encompass the standardisation of terminology, promote EAT recognition, facilitate the exchange of best practices, standardise educational competencies and inform on evidence-based practice. Shared knowledge, research and expertise can enhance skills and the quality of therapy delivered. Cultural differences are acknowledged and respected during meetings, and having attendees from a diverse background can broaden perspectives. A face-to-face meeting is held biannually when best practices can be shared practically, as well as the opportunity for in-depth discussions and networking to take place. Standardised definitions for EAT were established at the most recent meeting in Stockholm when the title was changed from Equine Facilitated Therapy to Equine Assisted Therapy. This is the umbrella term for EAT with therapy specific titles, such as Equine Assisted Physiotherapy or Equine Assisted Psychotherapy, for example, added as a definition. Virtual meetings are held quarterly, which help further the Network goals. Ongoing updates are fed back by the subgroups and goals are reviewed. Besides, during these meeting presentations and discussions take place highlighting the positive impact of EAT on various aspects of human health and well-being. EEATN contributes to the growth and progress of EAT in Europe, plus its recognition as a valuable therapeutic modality. It supports its members to improve their knowledge and expertise by engaging with therapists from different countries and disciplines. This will lead to enhanced outcomes for both the practitioners and clients.

Keywords: equine assisted therapy, collaboration, education.

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HORSE-ASSISTED INTERACTION WITH TEENAGERS USING ART THERAPY

Agnė Žūkaitė[1], Vilma Vilienė[2], Asta Racevičiūtė-Stupelienė[2], Monika Nutautaitė[2]

[1]Asocijacija "Sanatorijoje su žirgu", Lithuania
[2]Institute of Animal Rearing Technologies, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania

Corresponding author: laukinebite@gmail.com

Adolescence is one of the most difficult periods of life. When teens struggle with behavioural or mental health issues, their actions are a cry for help. Most of the time, they still lack the emotional maturity or development necessary to express themselves properly, so their response to a stimulus often worsens already bad situations. Through equine relationship therapy, adolescents can gain self-esteem and essential life skills that help them achieve success, have a strong work ethic, and have other positive and lasting traits. Art therapy is also used for adolescents, which helps them express and understand their feelings better. By combining art and equine therapies and applying them to teenagers, better results can be obtained in solving various types of problems. So, the aim of this study was to analyse the effects of horse-assisted art therapy sessions on adolescents. The study included 8 teenagers (11–16 years old) and 5 horses (5–18 years old). During the three sessions, the body language of the horses was assessed, and its expression was scored when the subjects drew on the horse during art therapy. The pulse variability of the horses was assessed with an Equine Polar heart rate monitor. To assess the differences more accurately between age groups of teenagers, the subjects were divided into two groups (Group 1, 11–13 years old, and Group 2, 14–16 years old). They were assessed for the level of stress experienced using the PSS-1O test, which consisted of ten questions. The results showed changing body language scores of horses between different sessions; however, while working with teenagers during art therapy, they changed slightly or increased in favour of humans during the sessions as the horses got used to the subjects and their actions ($P < 0.05$). Older horses were calmer than younger horses. The heart rate of horses when working with teenagers during art therapy varied depending on their body language ($P > 0.05$). The results showed that older teenagers (14–16 years old) experienced more stress, tended to show different types of emotions, and discovered the horse as a communication partner, while younger teenagers (11–13 years old) evaluated everything only through the prism of positive emotions. The study suggests that horses adapt positively to human interaction during art therapy sessions with teenagers, with older horses displaying greater composure. The correlation between horse body language and heart rate highlights the importance of nonverbal communication in these interactions. Furthermore, it indicates age-related differences in the emotional experiences of teenagers, with older participants exhibiting more varied emotions and viewing horses as communication partners, contrasting with the predominantly positive outlook of younger teenagers.

Keywords: equine, human, interaction, art, therapy.

STUDY ON DOG-ASSISTED INTERVENTIONS: BEHAVIOURAL ANALYSIS DURING A MOCK SESSION

Alberto Mair[1], Marta De Santis[1], Diletta Fornasiero[2], Luca Martelli[2], Laura Contalbrigo[1], Franco Mutinelli[1]

[1]National Reference Centre for Animal Assisted Interventions, Istituto Zooprofilattico Sperimentale delle Venezie, Italy
[2]Epidemiology and Risk Analysis in Public Health, Istituto Zooprofilattico Sperimentale delle Venezie, Italy

Corresponding author: amair@izsvenezie.it

Therapy dogs involved in animal-assisted interventions (AAIs) can be a valuable support for individuals experiencing physical or psychological challenges. The efficacy of the intervention is influenced by the functioning of the dog-handler dyad [1–3]. The dogs' and the handlers' personalities and the quality of their relationship are reflected in the behaviours exhibited during the course of the interventions. Additionally, individual predispositions may influence the stress load to which the dogs are subjected [4–5]. An experimental setting was designed to mirror the activities that the working dyad could potentially encounter during real-life interventions to understand in greater detail the dynamics involved and leverage them to enhance the overall therapeutic system [2]. A total of 23 certified dog-handler dyads participated in a 20-minute session comprising a series of predetermined activities, which included walking, petting, reading, and a "still face" [6] test. The dogs carried out the activities with their handlers in the first half of the test, while in the second half, they were required to repeat these activities with an unknown experimenter, who acted as a patient/client. Subsequently, the enacted behaviours were then observed and coded through a detailed ethogram, and the resulting behavioural indices were compared across different activities and moments within the session. The constellation of mutually communicative behaviours enabled the identification of different behavioural styles and preferences exhibited by the dog-handler dyads. This mock session forms part of a multi-step study, comprising the administration of personality questionnaires online to all certified Italian professionals and the collection of hormonal measurements through saliva sampling before and after the experimental behavioural testing. These preliminary results are part of a multimodal analysis of the dog personality and dog-handler relationship that will help elucidate the factors that contribute to the efficacy of AAI teams, which includes the preservation of the animals' welfare conditions, as well as the linking and reciprocal validation of self-report, hormonal, and behavioural assessments.

Keywords: dogs, assisted interventions, behavioural analysis, mock session

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BEEHIVE AIR – COMPOSITION AND APPLICATION

Agila Daukšienė[1,2], Jolita Klementavičiūtė[1], Vytautė Starkutė[1,3], Dovilė Klupšaitė[1], Ernestas Mockus[1], Elena Bartkienė[1,3]

[1]Institure of Animal Rearing Technologies, Faculty of Animal Sciences, Lithuanian University of Health Sciences, Lithuania
[2]Department of Anatomy and Physiology, Faculty of Veterinary Medicine, Lithuanian University of Health Sciences, Lithuania
[3]Department of Food Safety and Quality, Faculty of Veterinary Medicine, Lithuanian University of Health Sciences, Lithuania

Corresponding author: agila.dauksiene@lsmu.lt

Beehive air, a unique combination of volatile compounds produced within the hive, has gained increasing attention for its potential applications in apitherapy. This aerosolised mixture, consisting of essential oils, organic acids, and other bioactive substances, plays a crucial role in the health of honeybees (*Apis mellifera*) and is now being explored for therapeutic use in humans. It has been reported that 56 volatile compounds were identified from beehive air and its individual components and categorised into fatty acids, alcohols, aldehydes, esters, ether, hydrocarbons, phenol, ketones, nitrogenous compounds, and terpenes [1]. Profiling other beehive aroma from other localities or of bees reared on different crops and in a different climate could provide more detailed information on variation in the composition of volatiles among beehives. Honey, for example, includes more than 600 volatile compounds, including hydrocarbons, aldehydes, alcohols, ketones, acids, esters, terpenes and cyclic compounds. The aroma contents and biological properties of honey are influenced qualitatively and quantitatively by a botanical and geographical origin [2]. Studies suggest that exposure to beehive air may have beneficial effects on respiratory conditions, stress reduction, and overall well-being, thanks to its anti-inflammatory, antimicrobial, and antioxidant properties. The construction of specialised beehive houses is designed to optimise the therapeutic benefits of beehive air. This includes structural considerations to maintain hive safety, as well as architectural designs that allow for the controlled exposure of individuals to hive air without disturbing the bees' natural processes. Key elements of the construction include air flow control systems, insulation techniques to maintain ideal hive temperatures, and natural materials that enhance sustainability and support the well-being of both the honeybees and the patients. By leveraging natural substances from the beekeeping environment, beehive air presents a promising, non-invasive approach to holistic health treatments.

Keywords: Honeybee, beehive air, volatile compounds, application.

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APPLICATION OF ASSISTED ANIMALS IN EDUCATIONAL PROGRAMMES AT THE LITHUANIAN ZOOLOGICAL GARDEN

Egidijus Praspaliauskas

Lithuanian Zoological Garden, Kaunas, Lithuania

Corresponding author: Egidijus.praspaliauskas@zoosodas.lt

Assisted animals in educational programmes at the Lithuanian Zoological Garden (Kaunas, Lithuania) contribute to fostering an understanding biodiversity, wildlife conservation, and empathy toward less familiar species. The animals involved in these programmes include small mammals such as rabbits, hamsters, rats, and guinea pigs, along with various insects like cockroaches and stick insects, and reptiles such as snakes and lizards. These species are integrated into educational activities to offer participants learning experiences, helping to bridge the gap between humans and animals. The primary goal of using assisted animals is to provide participants, especially children and students, with direct contact with species they may otherwise rarely encounter. By facilitating these interactions, participants develop a better understanding of the roles these animals play in ecosystems, the importance of their conservation, and the need for respectful coexistence with wildlife. For many, particularly those with fears or phobias of certain species like insects or reptiles, these educational programmes offer a safe environment to overcome these anxieties and develop a more positive perception of the animals. The inclusion of animals in educational programmes not only promotes understanding but also builds empathy toward animals. Participants learn about the importance of animal welfare and are encouraged to appreciate the role that animals play in the natural world. Small mammals, reptiles, and insects serve as ambassadors for their species, illustrating the need for conservation efforts and the interdependence of all living organisms. By emphasising these aspects, the Lithuanian Zoological Garden encourages participants to become active stewards of the environment and advocates for wildlife protection. A critical element of this approach is ensuring the welfare of the animals used in these programmes. Animal welfare is a priority, with significant attention given to maintaining high standards of care, including appropriate housing, proper nutrition, and regular veterinary check-ups. The physical and emotional needs of the animals are always prioritised to ensure that they thrive within the educational context. The ethical implications of using animals in education are also considered, as it is important to respect the intrinsic value of the animals. These programmes aim to balance educational objectives with the humane treatment of the animals, ensuring that they are not exploited or harmed in the process. By doing so, the Lithuanian Zoological Garden emphasises the importance of responsible educational practices that benefit both humans and animals.

Keywords: zoo, animal welfare, education, animal and human interaction.

ENVIRONMENTAL ENRICHMENT FOR BLACK SEA BOTTLENOSE DOLPHINS (*TURSIOPS TRUNCATUS PONTICUS*) AT LITHUANIAN SEA MUSEUM DOLPHINARIUM

Emilija Rogačiovaitė

Lithuanian Sea Museum, Department of Dolphinarium Animal Care, Lithuania

Corresponding author: e.rogaciovaite@muziejus.lt

Environmental enrichment has gained significant attention in recent years as a vital approach to promoting natural behaviours and well-being in captive animals [1–3]. This presentation explores the significance of environmental enrichment for Black Sea bottlenose dolphins (*Tursiops truncatus ponticus*) in human care, with a focus on the strategies implemented at the Lithuanian Sea Museum Dolphinarium. A variety of enrichment strategies, including interactive training sessions and novel stimuli, have been used to create diverse enrichment experiences, which are categorised into five main areas: sensory, cognitive, social, food-related, and physical habitat [2–3]. The importance of engaging dolphins during their free time is emphasised, clarifying that these enrichment activities are distinct from training sessions and do not involve food rewards. Furthermore, a notable tool developed at the Lithuanian Maritime Museum, recognised internationally, is introduced, highlighting its effectiveness in stimulating cognitive engagement. The importance of ongoing monitoring and categorisation of enrichment activities is discussed to maintain dolphin interest and prevent habituation [4]. Lastly, future plans will focus on knowledge exchange within the animal conservation community, aiming to enhance understanding of dolphin behaviour and continually improve enrichment strategies.

Keywords: environmental enrichment, Black Sea bottlenose dolphins.

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WHAT ARE THE KEY BENEFITS OF INCLUDING CYNOLOGY IN EDUCATION?

Dainius Statkevičius

Kaunas "Vyturys" gymnasium, Lithuania

Corresponding author: dainiukas0219@gmail.com

Dogs have played a significant role in human life and culture for approximately 15 000 years. Cynology, the scientific study of dogs, encompasses various aspects such as their origin, breeds, anatomy, breeding practices, training methods, nutrition, and the organisation of dog exhibitions [1]. Next to cynology is canitherapy, which is a therapy method based on the positive effects of the interaction between people and dogs on the physical, psychological and social aspects of people. This method is often used in childcare and education facilities, health care facilities, nursing homes, etc. [2, 3]. Another important area is the psychological and physical trauma that can be caused by dogs. To address this issue, specialists abroad organise various preventive programmes in which participants not only acquire theoretical knowledge but also learn the rules for safe interactions with dogs and gain practical experience. In this context, a study conducted in Switzerland demonstrated that such programmes play a crucial role in shaping the relationship between children and dogs [4]. The contact-based educational approach has been shown to offer children invaluable experiences that contribute to a reduction in risky behaviours when interacting with dogs [5]. Other studies have indicated that interactions with pets significantly enhance the development of self-awareness, imagination, play, empathy, and a sense of morality in children. Furthermore, animals play a critical role in facilitating social and communicative skills in young individuals [6]. Taking this into account, the following activities are carried out in the gymnasium:

Educational programmes for elementary school students involve instruction on various dog breeds, guidelines for safely approaching and interacting with unfamiliar dogs, and protocols how to respond in the event of a dog attack.

- Social actions "Support the homeless" dedicated to the World Day of Animal Welfare are being organised.
- The project "Use waste and help the homeless" was implemented, aiming to raise awareness about environmental protection, sorting, secondary use of waste and charity.
- Brainstorming sessions titled "Do You Know Dogs and Their Breeds" are conducted for high school students.
- A new initiative for graduates titled ""Pat Me for Success" has been launched.
- Starting in 2024, senior students will participate in social activities by volunteering at dog club shows.

Keywords: activities with dogs, cynology role in middle school, the benefits of cynology in education.

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THE INFLUENCE OF KENNEL SIZE ON THE DOGS' CHRONIC STRESS IN ANIMAL SHELTER

Aleksandra Garbiec[1], Mirosław Karpiński[1], Dominika Makuch[2], Justyna Wojtaś[1], Kamila Kaszycka[3], Wanda Krupa[1], Patrycja Staniszewska[4], Paulius Matusevičius[5]

[1] Department of Animal Ethology and Wildlife Management, University of Life Sciences in Lublin, Poland
[2] Student Research Circle of Animal Behavior, University of Life Sciences in Lublin, Poland
[3]Doctoral School of the University of Life Sciences in Lublin, Poland
[4]Department of Invertebrate Ecophysiology and Experimental Biology, University of Life Sciences in Lublin, Poland
[5]Department of Animal Nutrition, Faculty of Animal Sciences, Veterinary Academy, Lithuanian University of Health, Kaunas, Lithuania

Corresponding author: miroslaw.karpinski@up.lublin.pl

Due to people's constantly growing empathy towards homeless animals, taking care of their well-being has become important. To assess the level of well-being, scientists, in addition to observing behaviour, measure the intensity of the stress reaction. The analysis of animal stress includes the body's reactions to stressors, the differences between short-term and long-term stress, and the impact of stress on animal health and behaviour [1]. Cortisol has been identified as a major indicator of stress, the level of which can be measured in many biological materials [2]. Testing the cortisol level in hair has become a popular method for assessing animal stress due to the ease and non-invasiveness of collecting the material [3]. The work is based on a study of cortisol levels in dogs from one animal shelter in Poland, where dog kennels have been enlarged in line with new veterinary requirements. In the shelter, dogs spend most of their time in a limited space, negatively affecting their physical and mental condition [4]. That is why it is so important to ensure appropriate living conditions, including selecting an appropriate space that ensures comfort [5]. The study involved 16 dogs, including 11 males and 5 females, who had stayed in the shelter for at least 7 months and lived constantly in the same kennels. Hair samples were taken twice from the same place right next to the animal's skin. The first samples were taken from dogs in old, smaller kennels just before moving to new, larger ones. The second one was 6 weeks after being moved to new kennels. The goal was to understand the effect of the kennel size on the cortisol levels of shelter dogs. The results showed an increase in cortisol levels in the dogs' fur as an indicator of the intensity of chronic stress. It can be stated that changing the place is stressful for animals and requires adaptation. Results can help to understand the welfare of dogs in animal shelters.

Keywords: canis lupus familiaris, shelter, stress, cortisol, hair.

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LEGAL REGULATION OF ANIMAL-ASSISTED THERAPY IN THE REPUBLIC OF LITHUANIA AND GLOBAL GOOD PRACTICE

Živilė Sadauskaitė, Rolandas Stankevičius

Department of Animal Nutrition, Faculty of Animal Sciences, Lithuanian University of Health Sciences, Lithuania

Corresponding author: zivile.sadauskaite@lsmu.lt

Different countries and organisations may have different requirements and legal regulations and legislation governing the practice of Animal Assisted Therapy (AAT). In Lithuania, the Animal Assisted Therapy service is assigned to complementary and alternative health care services [1].

After comparing the legal acts regulating animal-assisted therapy activities in Lithuania and legal regulation in other countries and global best practices, it was found that e.g., in Italy and France, there is one license for an AAT specialist, and in Lithuania licencing is based on the type of animal; it is important to note that it is not necessary for the institution to have an AAT license, it is enough that a specialist has it and comes to provide services in various health, care, children's day care centres, old people's homes and hospitals, which is the case in Italy, Ireland, and France [1–4].

The internationally represented workgroup has sought to describe the problems with the current ambiguity in the range of services that have been commonly referred to as AAI (pursuant of the term AAS), to provide clarity on definitions and terminologies, and to specify criteria for differentiating between them. The overall umbrella term AAS, which encompasses three major categories, is recommended. Animal-assisted treatment (AATx) refers to the integration of animals into the practice of mental and physical health professional practice, where the professional practices vary according to the scope, goals, and techniques of that profession. Animal-assisted education (AAE) refers to an educational service with academic, instructive, cognitive, social-emotional learning, and psychoeducational goals, practiced by credentialed and informal educators. A new category proposed is animal-assisted support programmes (AASP). They include previously existing services (e.g., animal visitation activities), as well as those that have evolved and have been developed over the past 10 years (e.g., courthouse facility dog programmes). AASP, which may be motivational and social in nature, or provide emotional comfort, involves programmes aimed at supporting and enhancing human well-being with the aid of animals [5].

The current literature review shows that scientists and practitioners have distinguished the concepts in great detail according to the specialist's education and competence (therapist, educator, social worker), and the activities carried out with assistance animals.

Keywords: animal-assisted therapy, legal regulation of animal-assisted therapy.

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THE EFFECT OF THERAPEUTIC RIDING ON HEMODYNAMIC PARAMETERS OF PEOPLE

Eva Mlyneková[1], Marko Halo[1], Ivan Imrich[1], Marko Halo jr.[2], Monika Šmondrková[1]

[1]Slovak University of Agriculture in Nitra, Slovakia, Faculty of Agrobiology and Food Resources, Institute of Animal Husbandry
[2]Slovak University of Agriculture in Nitra, Slovakia, Faculty of Biotechnology and Food Science, Institute of Applied Biology

Corresponding author: eva.mlynekova@uniag.sk

Hippotherapy has become part of therapeutic procedures that use the complex therapeutic effect of the horse on the client. The aim of the work was to analyse hemodynamic indicators of people during therapeutic riding. Changes in heart rate before, during and after riding and blood pressure before and after riding were evaluated in 68 probands. Probands were divided into groups according to riding performance level, age, gender and systolic and diastolic blood pressure values. Therapeutic riding represented the average load of the organism in the participating probands. When comparing probands according to performance level, there were significant differences in the heart rate before and after riding ($P < 0.05$) at the lower advanced performance level. Significant changes in the heart rate occurred during riding only in the age group from 16 to 40 years ($P < 0.05$). Both men and women achieved similar changes in the heart rate. No significant differences in the heart rate were found in people with low and high systolic blood pressure. There were statistically significant changes ($P < 0.05$) in the heart rate before and after riding only in probands with normal diastolic blood pressure. From the evaluation of the results of the effect of therapeutic driving on the level of systolic blood pressure, we found the highest values (133.92–135.92 mmHg) in the group of beginners. We recorded a decrease in systolic blood pressure after riding only in the group of less advanced probands. For them, the training load did not represent a significant physical load or mental discomfort. The highest values of systolic blood pressure depending on age were in probands aged 41–60 years. Statistically significantly higher values of systolic blood pressure were found in men ($P < 0.01$). The results of the analysis of diastolic blood pressure values confirm the beneficial effect of riding on the cardiovascular system of probands. Therapeutic riding decreased the level of diastolic pressure in probands with high blood pressure and increased it in probands with low diastolic pressure ($P < 0.001$). In the horses used in the therapeutic process, there was a statistically significant increase in the heart rate during training ($P < 0.001$). Based on the achieved results, we can state that the mutual interaction between the horse and the human significantly affects changes in hemodynamic parameters of clients. The interconnection of the mental well-being of the horse, the client and the hippo-rehabilitation team is the basis of success.

Keywords: blood pressure, heart rate, therapeutic riding.

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CURRENT PERSPECTIVES OF ANIMAL WELFARE IN ANIMAL–ASSISTED INTERVENTIONS

Ugnė Nedzinskaitė

Department of Animal Nutrition, Faculty of Animal Sciences, Lithuanian University of Health Sciences, Lithuania

Corresponding author: ugne.nedzinskaite@lsmu.lt

The moral legitimacy of integrating animals in animal-assisted interventions (AAI) has been challenged by Zamir [1], who proposed six violations of moral status including limitations of freedom and life determination, as well as training, social disconnection, injury, and instrumentalisation. Today, we are still challenged to solve these problems. There is a lack of reliable tools to assess the condition of assistance animals. There is also a lack of legislation to ensure animal welfare. Under human management, few, if any, animals may freely engage in natural behaviour. In contrast, if animals can actually benefit from the interactions with humans, their involvement as therapeutic aids in AAIs may be ethically justifiable. But we need to have the tools to reliably measure and evaluate a process [2]. If we do not have the tools to reliably measure and evaluate a process, we cannot manage it. It is our responsibility to find valid tools to assess and analyse the well-being of therapy-assisted animals [3]. Studies that allow assessing the suitability of specific animals for assistance in therapeutic activities, the behavioural characteristics of individual species, and the compliance of the inventory used with animal welfare requirements should become an integral basis of AAI methodologies.

Keywords: animal-assisted interventions, animal welfare, animal well-being.

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IMPORTANCE OF "ONE HEALTH" CONCEPTION AND ANIMAL WELFARE IN DOG THERAPY

Mindaugas Sėjūnas

Institute of Animal Rearing Technologies, Faculty of Animal Sciences, Lithuanian University of Health Sciences, Lithuania

Corresponding author: mindaugas.sejunas@stud.lsmu.lt

Our emotions are particularly important to dogs because they not only feel and express emotions, but also read people's emotional expressions. Dogs can respond functionally to emotional expressions and can use emotional information from other people to solve problems, i.e. getting information from faces and body postures allows them to make decisions [1]. This suggests that the behaviour of dogs reflects the behaviour, attitudes and emotional state of the people around them. This must be taken into account when working with therapy dogs. Recently, there has been a move to assess the impact of human-animal interaction on therapy dogs involved in human health care as widely as possible. The aim is to include the welfare of therapy dogs in the "One Health" framework. "The importance of animal welfare is increasingly acknowledged, indicating that the Ottawa Charter should be extended to include the welfare of non-human animals supporting the promotion of human health" [2]. The principle of "One Health" welfare recognises the benefits of the human-animal relationship and the promotion of health, while emphasising the importance of understanding animal welfare and the potential effects of physical and mental harm on therapy animals. Protection of animal welfare is based on five principles: nutrition, physical environment, health, behavioural interactions and mental state. Practitioners working with therapy dogs must be guided by ethical challenges, as the involvement of dogs in therapy can be fraught with tensions when people use the animal to achieve their own goals, and the dog has no such goals [2]. The main danger is the possible use of the dog as a therapeutic tool to provide emotional or therapeutic support, rejecting the animal as an individual with its own needs. The dog's welfare may be neglected; signs that the dog is showing signs of stress or is overtired may be ignored. Exhaustion, illness, intimidating environments, limited access to water, high temperatures and other stressors can not only adversely affect a dog's mental and physical health but can also lead to negative experiences that can have a profound effect on a dog's suitability for therapeutic activities. It has been observed that dogs were sensitive to the stress of the owner; a sensitivity reflected the well-being of the owner, which had a significant impact on the behaviour of the dog [3]. In the field of therapy dogs, there is a lack of guidelines and protocols for the ethical relationship between animals and humans, which define the welfare of the animal.

Keywords: emotional contagion, stress, dog therapy, interaction.

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THE POSSIBILITIES OF USING EQUINE–ASSISTED THERAPY TO IMPROVE CHILDREN'S MENTAL HEALTH

Viktorija Palubeckienė

Public institution "Auksinė kumelytė"

Corresponding author: viktorija.palubeckiene@gmail.com

Equine-assisted therapy (EAT) is a diverse field offering various approaches to improve children's health. EAT has significant positive effects on the physical and mental well-being, as well as the quality of life, of individuals with disabilities [1]. Equine-assisted psychotherapy (EAP) is particularly valuable in treating adolescents with serious emotional disturbances who resist traditional therapy [2].

While EAT can be a therapeutic intervention in its own, this presentation presents two clinical cases where EAT facilitated the client's acceptance of conventional, traditional services.

In the first case report, a 12-year-old girl with complex post-traumatic stress disorder (cPTSD) symptoms attended systematic equine-assisted psychotherapy (EAGALA) sessions. Through EAGALA, the girl was able to build new trusting relationships, reduce her anxiety, stabilise her mood, and ultimately continue with conventional counselling.

In the second case report, therapeutic riding served as a crucial catalyst for a 5-year-old girl with developmental delays. The presentation highlights the importance of EAT as a complementary component in complex child healthcare.

Keywords: equine-assisted therapy, child healthcare, mental health, complementary therapy.

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POSITIVE ASSOCIATION TO THE HUMAN, A DYNAMIC TOOL TO PROMOTE RESPECTFUL AND COLLABORATIVE WIN-WIN RELATIONSHIPS WITH EQUINES

Carlos Ganzabal Cuena[1,2]

[1]*Asociación Proyecto Caballo, Spain*
[2]*iPoney Outdoors Spaces, Spain*

Corresponding author: ganzabalcarlos@gmail.com, carlos@iponey.com, info@proyectocaballo.org

This paper aims to explore the concept of positive association to the human (AP) and its significance in fostering respectful and collaborative relationships. The presentation delves into the two approaches to understanding AP: from a psychological/scientific standpoint, emphasising the statistical correlation between variables, and from an inter-species interpersonal perspective, focusing on constructive, empathetic, and respectful relationships.

The promotion of beneficial and healthy association between humans and horses when variables move in the same direction emphasises mutual support, effective communication, and collaboration. Quality time spent together contributes to the well-being of both individuals, involving free participation, respectful dialogue, and unconditional communication. Activities are generated in an atmosphere of reciprocity, where there is an openness to the other's needs, fostering empathetic relationships. Trust as a co-creative, correlational process progresses through expressions of affect and value, requiring an understanding of individual needs, a holistic view of the environment, safety, active listening, and respectful communication. Awareness of body sovereignty, the importance of touch, emotional states, vital safety zones, curiosity levels, coherence, and the role of the human companion as a bridge between the needs of both individuals are key considerations. Greater opportunities and fewer restrictions lead to a higher quality of life, with the horse's perception and satisfaction being paramount. It is important to work taking into account the horse's optimal level to provide safe relationships, empathy through human-animal connections, physical rehabilitation, positive relationships, coherence, and adaptation to social change. This presentation aims to disseminate the value of positive human-animal partnership, addressing challenges and presenting opportunities for its implementation. By embracing a holistic approach, the goal is to foster a future where the real needs of horses are recognised and discussed, leading to a positive transformation in human-equine relationships.

Keywords: positive association to the human (ap), equine well-being, win-win relationships, equine needs, reciprocal activities, building trust, quality of life, emotional involvement, speciesism, social change, green economy, empathy, education.

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INTERACTION OF EMOTIONAL CONNECTION BETWEEN HORSE AND HUMAN

Otilija Mataitė[2], Vilma Vilienė[1]

[1]Institute of Animal Rearing Technologies, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania
[2]Veterinary Clinic "Tarandės Gyvūnų Namai", Lithuania

Corresponding author: e-mail address: mataite.otilija@gmail.com

As people become more emotionally involved with horses, they develop sophisticated communication skills, enabling horses to respond to human emotions [1]. An animal's reaction to stress can be influenced by the rider's or handler's emotional state, not just physical exertion, or environmental stimuli [2]. Cooperation and a strong emotional connection between the rider and the horse are crucial for good sporting results, reducing the risk of injuries, accidents, and stress for both [3]. To optimise the horse-human relationship, it is necessary to promote positive experiences through verbal or tactile communication, which strengthens the mutual emotional connection, decreases stress levels, and improves riding results. The purpose of this study was to analyse the interaction between the riding horses and the people riding them. To determine the mutual emotional connection between the horse and the human, the body language of the horse, the rider's touch to the horse and his voice were evaluated. Riding tests were conducted to determine the emotional connection between a horse and a person. The riding test consisted of two exercises: riding commands of 4 and a complete performance of 8-tuck. Both exercises were performed 4 times with an interval of 30 s. To determine the emotional level of the horse and the human, the heart rates of the horses and subjects were analysed per minute. A 5-question questionnaire for the subjects and a 3-question questionnaire for the parents of the subjects were used to determine the subjects' emotional level before and after riding.

The results of the study showed that the strength of the emotional connection between the horses in the stable and the people who ride them depends on the body language of the horses, the rider's touch to the horse and the result of his voice assessment scores. The execution time of the command also affected the efficiency of further executed commands. However, a study of heart rates between horses and humans showed that the heart rates of horses in a stable and the people who ride them are independent of each other. From the results of the survey of the subjects and the parents of the subjects, we can see that all children experience joy and happiness while riding and become more self-confident. Surveys also revealed to us that most subjects had fallen off their horses. Most developed a fear of falling again, while only a minority of subjects did not develop any psychological fear.

Keywords: human-horse interaction, horse, emotional transfer, emotional connection, human, horse riding.

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ASSURANCE OF FISH AND AQUATIC INVERTEBRATES' WELFARE IN THE LITHUANIAN SEA MUSEUM

Artūras Skabeikis[1,2], **Aurimas Grakauskas**[1], **Tadas Poškys**[1]

[1]*Lithuanian Sea Museum, Lithuania*
[2]*Institute of Animal Rearing Technologies, Faculty of Animal Sciences, Lithuanian University of Health Sciences, Lithuania*

Corresponding author: askabeikis@gmail.com

The Aquarium Department of the Lithuanian Sea Museum (Klaipėda, Lithuania) consists of 22 exhibition aquariums and 2 quarantine facilities, inhabiting 19 species of Lithuanian freshwater fish, 25 species of Baltic and North Sea fish, 97 species of tropical fish, 3 sturgeon species and ~30 species/higher taxa of aquatic invertebrates, including corals, sea anemones, sea urchins, sea stars, crustaceans and jellyfish. Assurance of natural behaviour, proper body condition, normal coloration and attractiveness, reflecting welfare of the aquarium fauna, require specific knowledge and husbandry. The main factors ensuring welfare of the fish and aquatic invertebrates under aquarium conditions are constant maintenance of good water quality, quarantine of newly arrived and treatment of sick animals, creation of heterogeneous environment with shelters and shaded areas mimicking natural conditions, properly selected species composition in each aquarium and well-balanced feeding. Results from previously conducted studies showed that interaction with aquatic animals in public or home aquariums benefit human health and well-being [1–3] and at some extent help to treat certain mental disorders [4–6]; therefore, aquarium exhibitions could potentially be used in the process of animal assisted therapy.

Keywords: aquariums, fish and aquatic invertebrates, welfare factors, human and aquatic animal interaction.

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ENHANCING ANIMAL-ASSISTED THERAPY: LEVERAGING INSIGHTS INTO ANIMAL-INDUCED EMOTIONS FOR IMPROVED PATIENT OUTCOMES

Elena Bartkienė, Vytautė Starkutė, Jovita Lukšaitė, Dovilė Klupšaitė

Institute of Animal Rearing Technologies, Lithuanian University of Health Sciences, Lithuania

Corresponding author: elena.bartkiene@lsmu.lt

In this research, we proposed that the effectiveness of personalised animal-assisted therapy could be enhanced by selecting specific animal species and breeds tailored to each patient's emotional responses. To our knowledge, this study is the first to employ the FaceReader technique in refining animal-assisted therapy practices, potentially serving as a foundational step in minimising or alleviating stress for patients interacting with animals. We evaluated images of various animal species – including dogs (*Canis familiaris*), cats (*Felis silvestris catus*), pigs (*Sus scrofa domesticus*), sheep (*Ovis aries*), and horses (*Equus caballus*) – along with their respective breeds. The dog breeds assessed included Australian Shepherd, Pug, Labrador Retriever, Doberman, Miniature Schnauzer, Beagle, various mixed breeds, Yorkshire Terrier, Cane Corso, Samoyed, and Chihuahua. The cat breeds included mixed breeds, British Shorthair, Himalayan, Siamese, Sphynx, and Bengal. For horses, we examined the Norwegian Fjord, Exmoor Pony, Andalusian, and Friesian breeds, while the pigs included Vietnamese Pot-Bellied and Kunekune. Finally, the sheep breeds assessed were Herdwick and Suffolk. We utilised FaceReader-6 software to analyse the facial expressions of participants. To evaluate the acceptability of different animal species and breeds, we employed a 10-point Likert scale, ranging from 0 (extremely disliked) to 10 (extremely liked). The data were organised and analysed using Microsoft Excel and SPSS Version 24 software. A total of 50 adult participants were tested to examine the emotional responses triggered by various animal species and breeds. To assess the effects of these animals on induced emotions, we conducted a multivariate ANOVA. Additionally, Pearson correlations (r) were calculated to explore the relationship between the intensity of emotions experienced by each participant and their corresponding Likert scale ratings. The findings of this study indicated that the species of the animal significantly influences the intensity of the emotions categorised as 'neutral' and 'happy,' as well as overall valence. Moreover, the breed of the animal notably affects the intensity and valence of the 'happy' emotion. Ultimately, the results of this research could serve as a foundation for personalised strategies to enhance animal-assisted therapy and assist individuals in choosing a suitable pet.

Keywords: therapy, animal, emotions, personalised methodology.

EXOTIC ANIMALS IN LIVE EDUCATIONAL SESSIONS

Gerardas Paškevičius

Ecologist / herpetologist

Corresponding author: dziungliuzmogus@gmail.com

Live educational sessions featuring exotic animals such as snakes, lizards, snails, and invertebrate animals offer unique and engaging opportunities for learning, particularly in schools, nature centres, and community events. These sessions provide direct, hands-on experiences that foster curiosity, empathy, and a deeper understanding of biodiversity. Engaging people with live animals encourages critical thinking about ecosystems, the importance of conservation, and the role these often-misunderstood creatures play in the environment.

Including a variety of animals, ranging from reptiles like snakes and lizards to invertebrates such as snails and giant cockroaches, helps break down fear and misconceptions. For example, snakes and cockroaches are often viewed with apprehension, but by seeing these animals up close, participants can appreciate their non-threatening, beneficial roles in controlling pests and balancing ecosystems. The presence of live animals makes learning tangible, providing sensory engagement that can be especially impactful for children, leading to a more memorable and meaningful educational experience. These programmes can inspire future interest in biology, zoology, or environmental sciences, making them an essential tool in science education.

Live educational sessions with exotic animals have a significant impact on people by fostering positive emotional and intellectual responses. First, they often help reduce fear and misconceptions. Many individuals have inherent anxieties about creatures like snakes and cockroaches, but seeing them in a controlled, educational setting can alleviate these fears. By handling or observing the animals up close, people are more likely to understand their ecological roles and view them with curiosity rather than fear or revulsion. These interactions also enhance emotional empathy, particularly in children. Direct contact with living creatures can evoke feelings of care and responsibility toward the animals and, by extension, the environment. This empathy can inspire a sense of stewardship for nature and wildlife conservation. Additionally, live sessions offer a multisensory experience, stimulating curiosity and engagement far beyond what textbooks or videos can provide. Participants often leave these sessions with a lasting appreciation for biodiversity, a desire to protect wildlife, and a deeper connection to the natural world. These outcomes can have a long-term influence on attitudes toward conservation and sustainability.

Keywords: exotic animals, live educational sessions, biodiversity, conservation education.

ASSESSMENT OF THE SITUATIONAL HORSE WELFARE DURING THE ANIMAL-ASSISTED THERAPY (AAT)

Jurgita Rutkienė[1], Kristina Mockevičienė[2], Ilona Gedminienė[3]

[1]Klaipėda University Institute of Continuing Studies, Lithuania
[2]Public Institution Child Development, Lithuania
[3]Vilnius University Šiauliai Academy, Lithuania

Corresponding author: simonyte.j@gmail.com

Animal-assisted therapy (AAT) is growing in popularity due to its obvious benefits to human health [1]. In recent years, public interest in the welfare of AAT therapy animals has also increased [2]. A measured and quantified level of stress would allow a detailed assessment of the welfare of the therapy animal and the impact of the therapy on the animal's health [3]. The amount of cortisol in animal saliva is significantly influenced by physical or mental stress [4, 5], daily circadian rhythm [6–8] and temperament [9]. The concentration of cortisol in saliva is a fraction of the concentration of free cortisol [4], so its level in the blood correlates with the amount in saliva [8]. Equine cortisol samples should be taken 15–20 minutes after the potential stressor has occurred [3]. Saliva sampling is an effective, painless, non-invasive method that does not cause additional stress to horses accustomed to human manipulation. This method is also easier than blood sampling. This study assessed the situational welfare of the horses participating in the AAT sessions. There is no single absolute indicator describing animal welfare [10, 11], so the study applied a multi-criteria assessment of animal welfare, including the analysis of physiological (hormone cortisol concentration in horse saliva) and ethological indicators.

Keywords: equine assisted interventions, stress assessment, horse welfare.

Acknowledgments: Kurtuvėnų Regional Park.

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FARM ANIMALS IN ANIMAL-ASSISTED THERAPY

Justyna Wojtaś, Klaudia Kaliszyk, Kamila Kaszycka

University of Life Sciences in Lublin, Poland

Corresponding author: justyna.wojtas@up.lublin.pl

Animal-assisted therapy provides opportunities for motivational, educational, recreational, and therapeutic benefits to enhance quality of life. For example, in humans with psychiatric disorders, it may reduce depression and state anxiety and increase self-efficacy [1]. A variety of animal species can be used, but it is recommended to restrict them to domesticated species. The most popular species in animal therapy are companion animals, equids and farm animals.

Farm animals and their products have a long-standing history of contributing significantly to human nutrition, clothing, research, development and medicine and have thus been essential in improving life expectancy and human health [2]. Increasingly, however, farm animals play a role in animal-assisted therapy. An example may be Cameroon goats or miniature pigs, which allow themselves to be rubbed, fed and cuddled for hours. Contact through observation is also possible [3]. Farm animal-assisted therapies involve interacting with and caring for farm animals to promote well-being [4].

Keywords: farm animals, human-animal interactions, therapy, activities

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THE IMPACT OF NUTRITION ON CANINE DENTAL HEALTH

Jūratė Rudejevienė[1], Nijolė Pečiulaitienė[2]

[1]Dr. L. Kriauceliunas Small Animal Clinic, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania
[2] Institute of Biology Systems and Genetic Research, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania

Corresponding author: jurate.rudejeviene@lsmu.lt

Numerous studies have highlighted the importance of proper nutrition in preventing dental issues such as plaque buildup, tartar formation, gum disease, and tooth decay in dogs [1]. Raw meat-based diets (RMBDs) include uncooked ingredients from either livestock or wild animals and may be home-prepared or commercial, with the latter being supplied as fresh, frozen or freeze-dried complete diets or as premixes intended to be complemented by raw meat. Claimed benefits, compared with conventional processed diets, are wide-ranging and include improved dental and skin health, prevention or control of disorders affecting any of the major body systems, and behavioural improvements [2]. This study aims to evaluate the influence of nutrition on the dental health of dogs and explore how dietary choices can impact their oral hygiene. Data was collected from owners about their dog's food supplements, food type, feeding frequency and other measures used to maintain dental hygiene. During the procedures, the degree of periodontal disease was determined, considering the condition of the teeth and gums. Arithmetic means, their errors and statistical reliability of the data were calculated for each evaluated trait. Statistically reliable data were considered when $P < 0.05$. 50 dogs were examined, of which 20% (n = 10) had gingivitis, 50% (n = 25) had periodontitis, and others had no dental issues. The data showed that 60% (n = 30) of owners chose commercial dry dog food, 10% (n = 5) chose commercial wet dog food, PMR diet was fed to 20% (n = 10) of dogs and BARF to 10% (n = 5). No one chose semi-moist dog food as the main meal. Chew toys were popular in all PD groups, but 28% (n = 14) of dogs with completely healthy teeth were chewing them ($P \leqslant 0.05$). Other factors influencing PD were also determined. Age is directly correlated with the condition of the teeth in dogs, and PD may appear and progress as the animal ages ($P \leqslant 0.001$). Larger dogs have a better dental condition than smaller dogs ($P \leqslant 0.001$). Food supplements and class of food have no statistically reliable relationship with the occurrence of periodontal diseases ($P > 0.05$). In conclusion, the evaluation of the influence of nutrition on the dental condition of dogs is a crucial aspect of pet care that can have a significant impact on their oral health and overall well-being.

Keywords: dog, teeth condition, nutrition, feeding type, RAW.

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ARTIFICIAL INTELLIGENCE IN ANIMAL-ASSISTED THERAPIES

Jolita Klementavičiūtė

Institute of Animal Rearing Technologies, Faculty of Animal Sciences, Lithuanian University of Health Sciences, Lithuania

Corresponding author: jolita.klementaviciute@lsmu.lt

This review explores the integration of artificial intelligence (AI) with animal-assisted therapy (AAT). AI can enhance AAT through various applications, such as utilising software programmes to monitor real-time interactions between animals and participants. Furthermore, AI can analyse patients' data to evaluate individual needs and track therapeutic progress, facilitating the development of personalised treatment plans. Additionally, AI can assist in identifying optimal patient-animal pairings based on temperament and emotional states [1, 2]. The use of robotic pets as therapeutic agents represents another promising avenue for AI in this context [3]. However, implementing these technologies in real-world settings poses challenges, including the complexity of designing balanced subject groups, ensuring technology accessibility, addressing training requirements, and gaining public acceptance. Ultimately, AI has the potential to augment traditional therapies, enhancing both accessibility and efficacy in mental health and rehabilitation environments by leveraging existing research and clinical practices. Looking ahead, the field of animal-assisted therapy is poised for significant advancements through the integration of artificial intelligence. It is predicted that AI algorithms will enhance AAT capabilities, enabling therapists to deliver more precise and tailored interventions for patients [4, 5].

Keywords: artificial intelligence, animal-assisted therapy.

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HOW CHILD-ANIMAL INTERACTIONS CAN RETRIEVE HEALTH

Inês Pereira-Figueiredo[1,2,3], **Ilda Gomes-Rosa**[1,4]

[1]*A1ThekidsFellows – Research Group in Anthrozoology, Portugal*
[2]*Neuroscience Institute of Castilla y León, Spain*
[3]*HETI Federation of Horses in Education and Therapy International*
[4]*CIISA, Faculty of Veterinary Medicine, University of Lisbon, Portugal*

Corresponding author: thekidsfellows@gmail.com

The inclusion of animals in therapeutic activities, known as animal-assisted services (AAS), is being widely used from the 1970s and consists of using animals with therapeutic training to promote healing in patients with emotional, physical and mental diseases [1]. In recent years, research on health benefits of child and animal interaction goes even further, creating a new field of inquiry in the research of human-animal interactions (HAI) [2]. Several studies are claiming the positive effects of owing a pet or living at the proximity of companion animals [3–5]. Reported outcomes include improvements of the human metabolism, to the point of influencing physical and emotional health of children or adults [4–5]. Child's exposure to pets significantly boosts positive emotions in humans [3], improves empathy, focus and social interaction, and hence increases self-esteem, pleasantness, and the sense of well-being. In the presence of these animals, the levels of anxiety and stress are reduced and, consequently, the cardiovascular parameters, blood pressure and the immune function improve [5]. Moreover, in addition to providing social support and reducing stress/distress, having a pet helps preventing a sedentary lifestyle, and thence, obesity and health risks associated. Despite the growing body of evidence on health and the psychological benefits of pet ownership and the AAI, the underlying mechanisms remain not totally known. The autonomic, neuroendocrine, oxytocinergic, dopaminergic, serotoninergic systems are apparently involved [6]. But more investigation is needed regarding the autonomic and neural activity changes induced by companion animals on children's emotions which may more accurately reveal the potential impact of pets on their psychological health. This presentation aims to make a point of the mechanisms that may be behind the therapeutic changes that HAI is able to produce on children.

Keywords: human-animal interaction, animals healing, companion animals.

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OVERVIEW AND FUTURE DIRECTIONS IN SOCIAL LEARNING AMONG WORKING DOGS

Monika Nutautaitė, Vilma Vilienė, Asta Racevičiūtė-Stupelienė

Institute of Animal Rearing Technologies, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania

Corresponding author: monika.nutautaite@lsmu.lt

Social learning involves processes where information from others influences learning, ranging from attention enhancement to imitation of novel behaviours. For social species like dogs, such learning is crucial. Despite extensive research on canine social cognition, application in training is limited. Key research areas include conspecific social learning and the dogs' ability to learn from humans. Altricial species, such as wolves, depend heavily on parental contact for brain development and social learning [1], with pups joining adults at kill sites by 10 weeks and staying with their natal pack for about 10 months. In contrast, domestic dogs are usually separated by 8 weeks and provisioned by humans, potentially missing these learning opportunities. A study involving German Shepherd puppies examined the effects of early separation from their mothers on their performance in narcotics detection [2]. One group of puppies was separated from their mothers at 6 weeks old, while the other group was allowed to observe their mothers performing detection work until they were 12 weeks old. The results showed that the puppies who observed their mothers performed better in narcotics detection tasks by the time they reached 6 months of age. This indicates that spontaneous social learning enhanced their training, although the exact mechanisms were not identified. Therefore, dogs have a strong capacity for social learning from humans [3]. From a young age, they can follow human gestures, such as pointing, and are capable of imitating human actions, as demonstrated through the "Do as I Do" training method [4–6]. This highlights their readiness to learn from human cues. However, dogs may follow human social cues even when not optimal, such as preferring an empty container suggested by a human over one with food [7, 8]. Comparative studies revealed that, unlike non-domesticated canids, dogs maintain eye contact longer with humans who previously provided food or attention. Genetic studies indicate differences between dogs and wolves, with specific genetic variations linked to heightened social behaviour in dogs [9]. However, both genetic predispositions and life experiences play crucial roles in dogs' social development. Future studies should examine how to integrate social learning into working dog programmes, focussing on early observation of conspecifics to potentially improve training results and adaptability in challenging situations. Additionally, applying "Do as I Do" training can provide flexibility and efficiency in teaching a wide array of behaviours, particularly for service dogs that require diverse skill sets. Moreover, balancing the minimisation of human influence with leveraging dogs' sensitivity to social cues could refine training methodologies for optimal efficacy.

Keywords: social learning, canine cognition, human-dog interaction, training methods, working dogs.

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RELATIONSHIP OF CANINE GENES AND BEHAVIOR

Indrė Mečionytė, Lina Anskienė, Giedrius Palubinskas

Department of Animal Breeding, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania

Corresponding author: indre.mecionyte@lsmu.lt

Animal welfare is the concept of humane use of animals with the aim of minimising the pain, suffering and stress experienced by animals and improving the welfare of animals at all stages of their lives [1]. Dogs working in canine therapy have to communicate and cooperate with strangers a lot. Therefore, it is necessary to consider not only the benefits for people, but also how to choose dogs with the right social skills, so that we do not pose a threat to people and take into account the well-being of dogs. Dog breeds differ not only in appearance, but also in behaviour, and it is thought that some of the behaviour between dog breeds or in breed itself may be down to genes [2]. The present results suggest that genes may become important markers for examining the genetic background of behavioural characteristics in dogs [3]. Endophenotypes related to the DRD4 in dogs are important for studying canine behaviour and its genetic basis. DRD4 encodes the D4 subtype of the dopaminergic receptor. Dopaminergic genes are suspected to influence behaviour, because dopamine is involved in the brain's reward system as well as in cognition, movement control and attention [4]. The objectives of this review were to examine currently available knowledge about canine DRD4 and its relation to dogs' behaviour. Three DRD4 regions were identified: Exon I, Exon III, and Intron II. According to the articles, the Exon III region of the DRD4 has 8 alleles, and different breeds have from 2 to 7 alleles. Exon I and Intron II regions have only two alleles each (short and long). Findings suggested that the allele frequency in regions varied significantly between different breeds. Studies also indicate that certain DRD4 variants can influence dog behaviour. These findings can be useful tools for selecting dogs for therapy or other activities where social skills are important.

Keywords: DRD4, canine, behaviour.

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EVALUATION OF THE CHANGE IN HORSE BODY LANGUAGE, TEMPERAMENT, AND BEHAVIOUR WITH HUMANS

Vilma Vilienė, Asta Racevičiūtė-Stupelienė, Monika Nutautaitė, Beatričė Blažytė

Institute of Animal Rearing Technologies, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania

Corresponding author: vilma.viliene@lsmu.lt

Animal-human interaction is a broad term that refers to any relationship between a human and an animal. It encompasses all aspects of these relationships, which can be challenging to define due to the complexity of both organisms. Positive interactions are characterised by mutually beneficial relationships that enhance emotional, psychological, and physical well-being [1]. These bonds are strengthened through friendly behaviour, individuality, and shared experiences, improving both the well-being of the person and the horse, as well as increasing work safety and efficiency. Therefore, the aim of this study was to evaluate changes in horse body language, temperament, and behaviour in relation to humans. The aim of this study was to evaluate changes in horse body language, temperament, and behaviour toward humans. Five four-year-old mares, a person familiar to the horses (A), and an unfamiliar person (B) participated in the study. Three behavioural tests were conducted to assess human-horse interaction: the voluntary approach test (test 1), the avoidance distance measurement test (test 2), and the physical contact tolerance test (test 3). The horses' body language and temperament were also evaluated during these behavioural tests. During the first test, the horses responded equally curiously and friendly to both the familiar and unfamiliar individuals. Although they approached the familiar person slightly faster, the difference was not statistically significant. In the second test, which measured avoidance distance, the horses maintained less than 1 meter from both individuals A and B ($P > 0.05$). This small avoidance distance is a positive indicator, reflecting normal horse behaviour. In the third test, all horses eventually allowed physical contact with both individuals and received high scores. When assessing body language, the horses displayed more relaxation with the familiar person but maintained interest and affection toward both individuals. In terms of temperament, the horses were more obedient to the familiar person but also exhibited positive behaviour toward the stranger, showing curiosity and being easy to handle. In conclusion, the horses' responses to familiar and unfamiliar individuals were similar, with no statistically significant differences in approach or avoidance behaviour. The low avoidance distance and acceptance of physical contact with both individuals indicate positive behaviour and good social adjustment. While the horses were more relaxed and obedient with the familiar person, their curiosity and ease of handling when interacting with the stranger highlight their ability to adapt to new social situations.

Keywords: human-horse interaction, horse behaviour, familiar and unfamiliar individuals.

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ASSESSMENT OF HORSES' FEAR AND REACTION TO HUMANS

Lina Anskienė[1], Karolina Koncevičiūtė[2], Vilma Vilienė[2], Asta Racevičiūtė-Stupelienė[2], Monika Nutautaitė[2]

[1]Department of Animal Breeding, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania
[2]Institute of Animal Rearing Technologies, Veterinary Academy, Lithuanian University of Health Sciences, Lithuania

Corresponding author: lina.anskiene@lsmu.lt

Effective communication and bonding between species rely on understanding the emotional states and expressive behaviours of one another. This is especially crucial in human-horse relationships, as misinterpreting horses' communicative signals can easily result in serious injuries [1]. Understanding horses' body language is essential for humans to build trust and improve interactions [2]. The objective of the research was to evaluate the fears of Holstein breed horses and their reactions to humans. Each horse was evaluated individually, without any limitations or restrictions. To evaluate the horses' fear and reactivity toward humans, three behavioural tests were performed: 1st test (voluntary approach test), 2nd test (avoidance distance measurement test) and 3rd test (physical contact tolerance test) [2–3]. Additionally, reactions to stimuli during interactions with humans were observed. These tests also served to assess the horses' body language and temperament. Two evaluators took part in all tests, and the impact of human gender on the horses' fears and reactivity was examined. The statistical analysis of the data was performed using the SPSS 25.0 programme. The Spearman correlation was used to detect the linear relationship between investigated traits. The differences in the means of variables were analysed by the Student t-test. A probability of less than 0.05 was significant ($P < 0.05$). The results of the horse body language test showed that the horses responded equally to both men and women. The average temperament of horses interacting with evaluators of different genders showed tendency to be 0.8 points higher with male evaluator ($P > 0.05$). After analysing the relationships between the evaluators and the horses' voluntary approach to different genders, it was found that the average time for horses to approach a woman was 74 seconds shorter than the time taken to approach a man; meanwhile, horse avoidance distance measurements showed consistent results: 83.3% of horses exhibited no significant avoidance (< 1 m) towards both a female evaluator and a male evaluator. The interrelationships regarding the physical touch of the tested horses and evaluators of different genders revealed that the average tolerance for physical contact with men was 0.17 points higher than with women ($r = 0.857$, $P < 0.01$); while the horses' reactions to a sudden stimulus revealed a tendency that horses responded, on average, 7.49 seconds faster to the stimulus from a man than they did when the same stimulus was presented by a woman ($P > 0.05$).

Keywords: horse, body language, temperament, physical touch, sudden stimulus.

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BLOOD CORTISOL INDICATORS AND WORKLOAD IN CANISTHERAPY DOGS

Agnė Dovidė, Jūratė Kučinskienė, Vytautas Ribikauskas

Lithuanian University of Health Sciences, Lithuania

Corresponding author: vytautas.ribikauskas@lsmu.lt

Blood serum cortisol level was measured in 5 therapy assisting dogs (3 Siberian huskies, 1 golden retriever, 1 mixed breed dog) before and after their work sessions at the beginning of a working season and 2 months after the beginning. An average cortisol level for first measurements was 1.33 ug/dL (SD 0.42, max 1.99, min 0.89); meanwhile, after an animal assisted therapy session, the cortisol level increased to 1.47 (SD 0.52, max 2.28, min 0.95). After 2 months of a working season, before a therapy session, an average cortisol level was 1.35 (SD 0.45, max 2.05, min 0.90); meanwhile, after an animal assisted therapy session, the cortisol level increased to 1.40 (SD 0.48, max 2.11, min 0.91). The results showed that the cortisol level after having a therapy class increased less in two months compared with the initial situation. It shows how well dogs adapt to theoretically stressful conditions and feel no more long-lasting stress.

Another experiment was carried out for eight weeks with two Siberian huskies in order to estimate the workload (completed distances) of animals during therapy working sessions compared with their usual daily walking and sled sports training. The results revealed that during the therapy work with children dogs covered 12% to 22% of all their usual daily distance. Such workload for dogs is not high, does not exceed their daily physical activity and does not endanger their welfare.

Keywords: canistherapy, dogs, cortisol, workload.

SMALL RUMINANTS IN ANIMAL-ASSISTED THERAPY

Vilija Buckiūnienė

Institute of Animals Rearing Technology, Faculty of Animal Science, Lithuanian University of Health Sciences, Lithuania

Corresponding author: vilija.buckiuniene@lsmuni.lt

Animals have been valued and used to improve human physical and mental health since ancient times. Animal-assisted therapy (AAT) is a complementary approach to traditional medicine, involving trained animals. AAT can enhance cognition, commitment, character growth, and the learning process. Commonly used species in animal-assisted therapy include cats, dogs, horses, dolphins, and other animals [1]. AAI is a general term for all three types: AAT, animal-assisted activities (AAA) and animal-assisted education (AAE). AAT refers to therapy with an animal, focused on health improvement and achieving a specific therapeutic goal; AAA refers generally to having a contact with an animal, more focused on wellness and recreational aspect of human–animal relation; and AAE refers to interaction with an animal for educational purposes [2–4]. The use of small ruminants (e.g., mainly sheep and goats) in scientific research has been increasing significantly in recent years. Initially, these species were used as animal models for human diseases and in research in animal nutrition and agriculture. More recently, adding to their initial functions, small ruminants have also started to be used in more complex studies of biotechnology, genetics and molecular biology, being essential sources of information in the fields of human and veterinary clinics, agriculture, anatomy and physiology, and other fundamental sciences [5, 6]. AAT is a newly evolving field that holds great promise and potential for many populations. It involves using close and natural contact with animals to assist in the healing of psychological, emotional and physical problems, rather than using them as sources of antibiotics which are better obtained from pharmacological sources [7]. This type of therapy is directed at people with disorders and deficits in the psychomotor sphere, for example, children with Down syndrome, autism, cerebral paralysis, ADHD, and muscular atrophy, and adults with depression, schizophrenia, cardiovascular diseases, dementia, Alzheimer's disease, rheumatoid arthritis, high level of fear and anxiety and other diseases [8].

In conclusion, it could be said that animal-assisted interventions are becoming more and more popular. Applying them as a valuable addition to a treatment or rehabilitation, however, should be supported by scientific research confirming their effectiveness. AAI shave a significant potential to enhance well-being and mental health across various contexts, but more research is needed to fully understand their effectiveness and safety in different settings and age groups.

Keywords: small ruminants, animal-assisted therapy, human.

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