



**van hall
larenstein**
university of applied sciences

EQUINE FUTURE – *challenging perceptions*

INTERNATIONAL
NETWORK EQUINE SCIENCE
22nd and 23rd of October 2018

Welcome to Van Hall Larenstein

Welcome to Van Hall Larenstein, the most sustainable University of Applied Sciences in the Netherlands. We train high-quality, ambitious and innovative professionals who contribute to a more sustainable world. The curricula of Van Hall Larenstein focus on the domains Delta Areas and Resources - Food and Dairy - Animal and Business. Alongside Bachelor programmes we also provide Master programmes, certificate programmes and short courses for regional, national and international students. As a university of applied sciences, we conduct high-quality practice-based research which enhances both our teaching and our position as a research institute.

Our educational programme is competence based. This means that, right from the start, students are in close contact with professional life and practice. Supported by our teaching staff, students work on their competences in a range of projects relating to applied research and practical internships. That is why choosing Van Hall Larenstein also means choosing a professional education, which is applied in real life!

At Van Hall Larenstein we like to create an inspiring international environment. Students work together with peers from different countries and develop a network of friends and colleagues from all over the world. Thanks to our internationally oriented curriculum, students are trained to develop a sharp focus on international practice. Van Hall Larenstein has over 4000 students and is home to over forty different nationalities. These are provided with various opportunities to operate in an international context - not just in programme-specific projects, but also in the work placement and thesis. At Van Hall Larenstein we provide students with opportunities for international educational exchange and professional development.

Van Hall Larenstein is based on two locations in the Netherlands: Leeuwarden and Velp.

Equine Sports & Business

As part of the Animal Husbandry programme, the specialization "Equine Sports & Business" prepares students for an international career in the equine sector. In Europe, millions of people are active in the equine sector. Think of breeding, sport, leisure or business activities at all different levels. The equine industry is rapidly expanding throughout the world, and therefore, continues to professionalise as a sector. Western European countries, like the Netherlands, Germany and the UK, have become key players in this international field. These countries are highly recognised worldwide for the breeding and trading of sport horses as well as for their high level of sport performance and equine knowledge.

The increasing number of international transactions – sport horses, equine products and horse knowledge – demand internationally oriented people, who can combine their interest in horses with sound business knowledge. The sector needs individuals with the ability to analyse business performance, spot market opportunities and come up with innovations. To be successful in this field, students have to be able to convert results from scientific research into practical situations. Solid knowledge about horses and a constant focus on finding new solutions is required for this. Equine Sports & Business aims to find a balance between equine science and business knowledge. The programme contains topics such as nutrition, breeding, exercise physiology, training, rider physiology and psychology plus welfare and behaviour. In addition, subjects such as finance, managerial economics, management, marketing and international trade are important elements of the programme. Besides knowledge you also learn important skills like networking, advising, planning and organising.

Network Equine Science Meeting

EQUINE FUTURE- challenging perceptions



International Network Equine Science

Founded in 2013 through five original partners, the International Network Equine Science has the goal to enable equine science students to open up new perspectives through intensive exchange of research results. The network consisting currently of seven universities is meeting once a year to give students and supervisors the opportunity to exchange and discuss their recent work and also spread this knowledge to the general public.

Participating universities

Berner Fachhochschule, School of Agricultural, Forest and Food Sciences (HAFL) Zollikhofen (Switzerland)



Hochschule Osnabrück (Germany)



University of Göttingen (Germany)



Free University Berlin (Germany)



Nürtingen-Geislingen University (Germany)



Van Hall Larenstein University of Applied Sciences (Netherlands)



University of Veterinary Medicine, Vienna (Austria)

EQUINE FUTURE- challenging perceptions

The equine industry is under pressure- more media attention about the future of breeding, the welfare of horses, the training practices of riders and the equine industry in general forces the industry to challenge long held perceptions within and outside of the sector. Science and innovation need to help the industry to prepare for the future. Students and supervisors from the Universities (of Applied Sciences) that are part of the network, but also the public, will have the opportunity to discuss recent research on Technology, Welfare, Management and Sustainability related to horses.

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DAY 1- 22nd of October – Student Day - Workshops

08:45	Conference Registration with Coffee & Tea		Chapel
09:15	Introduction to the programme Hans van Tartwijk – Major Coordinator “Equine Sports & Business”		Chapel
09:30	Start of workshops	Round 1	
	Workshops (see explanation of workshops in the back)		
	1. Horse Feed and Technology- Challenges and Ideas <i>Rob Krabbenborg PAVO</i>		A017
	2. Starting a communal research project with the “International Equine Science Network” <i>Dirk Winter and Sandra van Iwaarden FH Nuertingen/ Van Hall Larenstein</i>		D005
	3. Monitoring the welfare of horses Monitoring systems in different countries <i>Hans Hopster and Femke Kromhout VHL Animal Health, Behaviour & Welfare Research Group</i>		D009
10.30	End of Round 1		
10.45	Start of workshops	Round 2	
	4. Defining and improving sustainability in the horse industry <i>Ruth van der Beek and Xander Noë Van Hall Larenstein/ KNHS</i>		E009
	5. Riding tack of the future- how can we innovate the traditions? <i>Johannes Stübben Firma Stübben</i>		E011
	6. Technology in training <i>Menke Steenbergen IPOS Technology</i>		Chapel
11.45	Poster Sessions Hand out of Take away lunch Leave for practical part of the day		Chapel

Network Equine Science Meeting

EQUINE FUTURE- *challenging perceptions*

DAY 1- 22nd of October – Student Day – PRACTICAL PART

12:30 Arrival at *Hendriks Sporthorses (Hans Hendriks)*
Loostraat 1a
6924 AB Loo (Gld)
Gelderland

12:45 Arrival and guided tour of the facility
Presentation “Equine Landscaping” by Jeroen Hendriks (Hendriks Landscape)

13:30 Start of practical part “Technology in Training & Research”
Location: indoor arena

13:30 Workshop 1 **Sensor based gait analysis**
John Voskamp -Equi Moves www.equimoves.nl

14:15 Workshop 2 **Rein tension sensors**
Menke Steenbergen - IPOS technology www.ipostechnology.com

15:00 BREAK

15:30 Workshop 3 **Heartrate monitor**
Cees van Beckhoven- Hylofit Heartrate Measurement www.hylofit.com

16.15 Workshop 4 **Saddle pressure mat**
Linda Roost- Paerd, Saddlemeasurement www.paerd.nl

17.00 Workshop 5 **Non-invasive measurement of stress hormones**
Konstanze Krueger – FH-Nuertingen

Extensive workshop descriptions can be found at the end of this programme booklet

17.45 Closing of practical day

18.00 Network Dinner if booked

Directly after the practical day we will start with the network dinner
This dinner could be booked together with the ticket for 20€ extra
Buffet Dinner with schnitzel, meatballs, satésticks, vegetarian alternative, fries, baked potatoes,
salad, bread and herbal butter as well as including three drinks (beer, wine or soda)
Additional drinks need to be paid directly by the participants

The dinner will be hosted in the stables of the practical location

20.00 Roughly End of Day 1

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DAY 2- 23rd of October – Public Day – Morning

08:45 Conference Registration with Coffee & Tea

Chapel

09:00 Welcome word by Peter van Dongen- Chairman of the board of Van Hall Larenstein

09:15 Introduction to the programme

Hans van Tartwijk – Major coordinator: “Equine Sports & Business”

09:30 Future of Equine Husbandry (Oral presentations ~15 min.+ 5 min Q&A; Poster 6 min)

Oral Einfluss von Weidesystem, Weidedauer und Haltungssystem auf das Bewegungsverhalten von Pferden auf der Weide (GER)
Schöppner, A-K.; Tonn, B., Isselstein, J. & Schmitz, A.
Presented by: Ann-Kathrin Schöppner – University Göttingen

Oral Cost efficiency of wood pellets used as a horse bedding material (ENG)
Christ, F., Scheider, D., Schneider, S.
Presented by: Franziska Christ- Nürtingen-Geislingen University of Applied Sciences

Oral Der Einsatz von Führenanlagen aus wissenschaftlicher und praktischer Sicht (GER)
Hoffbauer, E., Linnert, L., Richter, M., Welzel, B., Westendarp, H, Zech, K., Sitzenstock, F.
Presented by Eva Hoffbauer- University of Applied Sciences Osnabrück

Poster Tränkwassequalität und –quantität von Pferdepensionsbetrieben (ENG)
Leve, J.-L., Sitzenstock, F., Westendarp, H.
Presented by: Florian Sitzenstock – University of Applied Sciences Osnabrück

10.40 Future training of horses (Oral presentations ~15 min.+ 5 min Q&A; Poster 6 min)

Oral Der Einfluss verschiedener Reitweisen auf Wirbelblockierungen beim Pferd (ENG)
Beier, J.
Presented by: Judith Beier- University Göttingen

Oral Performance diagnostics in Icelandic sport horses (ENG)
Weiher, N., Winter, D., Theobald, P.
Presented by: Nora Weiher- Nürtingen-Geislingen University of Applied Sciences

Poster Testing the impact of a demonstrator horse and the human handler on a horse in a frightening situation (ENG)
Kowasch, N.; Rettig, A.; Weritz, L.
Presented by Nadine Kowasch- Van Hall Larenstein- University of Applied Sciences

Poster Investigating the impact of a new saddle pad (Jason) on the saddle pressure of the horse (ENG)
Grimberg, S., van Iwaarden, S.
Presented by: Sandra van Iwaarden -Van Hall Larenstein- University of Applied Sciences

11.30 Time to view posters and talk to authors

12.00 Lunchbreak & networking

A017



DAY 2- 23rd of October – Public Day – Afternoon

13.00 Outcomes of the workshops of the previous day

Chapel

Presented by one of the students of each workshop

Horse Feed and Technology-Challenges and Ideas
Rob Krabbenborg of PAVO

Starting a communal research project with the “International Equine Science Network”
Dirk Winter and Sandra van Iwaarden of FH Nürtingen/ Van Hall Larenstein

Monitoring the welfare of horses -Monitoring systems in different countries
Hans Hopster and Femke Kromhout - Animal Health, Behaviour & Welfare Research Group

Defining and improving sustainability in the horse industry
Ruth van der Beek and Xander Noe Van Hall Larenstein/ former KNHS

Riding tack of the future- how can we innovate the traditions?
Johannes Stübben- Stübben

Technology in training
Menke Steenbergen- IPOS technology

13.30 Digitalisation of the equine industry (*Oral presentations ~15 min.+ 5 min Q&A; Poster 6 min*)

Oral Usage and potentials of digitalisation in active stables (ENG)
Voigtländer-Schnabel, S.
Presented by: Sophia Voigtländer-Schnabel- Nürtingen-Geislingen University of Applied Sciences

Oral Staub im Pferdestall digital messen: Einfluss von Einstreu und Management (ENG)
Labie, C., Kägi, F., Küng, P. Herholz, C.
Presented by: Carole Labie- Berner Fachhochschule BFH-HAFL Zollikofen

14.10 Future equestrian markets (*Oral presentations ~15 min.+ 5 min Q&A; Poster 6 min*)

Oral The Future of eventing (ENG)
Fröger, M., de Boer, E., van Iwaarden, S.
Presented by: Mariska Fröger, - Van Hall Larenstein- University of Applied Sciences

Poster Investigating the market potential of a Dutch equine company in Belgium (ENG)
de Kerff, N., Rettig, A.
Presented by: Annika Rettig- Van Hall Larenstein- University of Applied Sciences

Poster Einflussfaktoren auf den Verkaufspreis bei den Auktionen des Holsteiner Pferdezuchtverbandes (ENG)
Kretschmer, A., Köhlbrand, J., Wassmuth, R., Sitzenstock, F.
Presented by: Florian Sitzenstock – University of Applied Sciences Osnabrück

14.50 *Coffee break*



15.20 Outcomes of the practical afternoon – Technology in Training & Research

Presented by one of the students of each technology

Sensor based gait analysis- Equi Moves by John Voskamp

Rein tension sensors- IPOS technology by Menke Steenbergen

Heartrate monitor- Hylofit Heartrate Measurement by Cees van Beckhoven

Saddle pressure mat- Paerd
(Professional in Applied Equestrian Research and Development) by Linda Roost

Noninvasive measurement of stress hormones

15.50 Future health of horses & riders *(Oral presentations ~15 min.+ 5 min Q&A; Poster 6 min)*

Oral Die Effekte der Hippotherapie auf die Gesundheit des Patienten (GER)

Vella, A.

Presented by: Adelina Vella, - Nürtingen-Geislingen University of Applied Sciences

Poster Das Sommereczem beim Islandpferd (GER)

Hageman, S., Wassmuth, R., Sitzenstock, F.

Presented by: Florian Sitzenstock – University of Applied Sciences Osnabrück

Poster Der Hufmechanismus – was wir wirklich wissen! (GER)

Blatz, S.

Presented by: Stefanie Blatz – Nürtingen-Geislingen University of Applied Sciences

16.30 Closing words

Selection of winner of presentation & posters

Final questions & closing remarks

17.00 Approximate end

Theoretical workshop descriptions

1. Horse Feed and technology – challenges and ideas

By Rob Krabbenborg, Pavo

In this workshop participants will explore what technology can contribute in the world of horse nutrition. How can technology influence what we feed our horses and how does the world look like in 5 – 10 years from now ?

Rob Krabbenborg is a man with a vision and many years of experience in innovating and developing. Through his position at PAVO he is also involved in many projects that deal with technology in horse nutrition and welfare.



2. Starting a communal research project with the 'International Equine Science Network'

By Dirk Winter and Sandra van Iwaarden, FH Nürtingen Geislingen and Van Hall Larenstein

In this workshops participants will work out an idea for a communal research project that the institutes of the equine science network can participate on. What is a topic that will help us to challenge perceptions and how can this be researched?

Sandra van Iwaarden (Van Hall Larenstein) and Dirk Winter (FH Nürtingen) are both experienced lecturers and researchers that have helped many students to set up projects before. Achieving more communal research projects is a goal of the Equine Science Network.



3. Monitoring the welfare of horses – comparing use of monitoring systems between countries

By Hans Hopster and Femke Kromhout, VHL animal health, behavior & welfare research group

Animal welfare is a topic of increasing societal concern, getting a lot of media attention. The welfare of horses is an important issue for the industry as well but nevertheless welfare issues easily generate negative media attention. In this workshop the participants learn about the various methods to assess the welfare of horses, what monitoring systems there are in the different countries and how these are used, but also how welfare standards are put into practice.



Hans Hopster is leader of the research group for animal welfare at Van Hall Larenstein. With his group he executes many projects on animal welfare, behavior and health in various species. Femke Kromhout, member of the research group and lecturer Animal Management at Van Hall Larenstein, has developed an equine welfare monitor in her master thesis.

4. Defining and improving sustainability in the horse industry

By Ruth van der Beek (Van Hall Larenstein) and Xander Noë (former KNHS)
Conserving the planet for future generations is something that we all need to work on. How can sustainability be reached within the equine industry? What are good examples and what needs to happen to make the equine sector more sustainable?

As the greenest university of applied sciences of the Netherlands, Van Hall Larenstein has made sustainability one of their core topics. Equine Sports & Business Lecturer Ruth van der Beek teaches sustainability in the programme and is looking forward to explore a more sustainable future of the equine industry.



5. Riding tack of the future- how can we innovate the traditions?

By Johannes Stübben, Stübben
In this workshop the participants will work out what innovations could be interesting for our equine tack. What do we actually need for our horses? How can we improve welfare and training with special redesigned tack? What will our future saddles and bridles look like?

Johannes Stübben is the CEO of German tack producer Stübben. Within the last years Stübben has predominantly focused on innovating while keeping the long tradition of the family business. As a result of this innovation process they have developed, produced and marketed tack innovations such as the Equi-Soft Saddle and Girth and the Freedom Bridle.



6. Technology in training

By Menke Steenbergen, IPOS Technology
Measuring is knowing and wearables are hot. What does this mean for the equine sport? In this workshop we will explore together what the technology of the future will bring. Can technology make the sport more fair and transparent and will all horses wear measuring devices in the future?

Menke Steenbergen has recently launched the IPOS sensor which is a rein pressure sensor that measures the equality of contact and lightness as well as the straightness of horses. Through her company she has participated in a lot of innovation fairs and has a good view on the technology market.



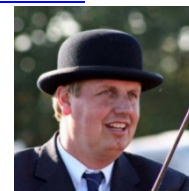
Practical workshop descriptions

1. Sensor based gait analysis

John Voskamp -Equi Moves

www.equimoves.nl

Portable equine gait analysis system that allows an assessment of gaits of the horses. The system is based on miniature kinematic sensors that will be attached to the legs, withers and pelvis of the horse. Movement coordination, temporal and spatial gait parameters are being measured and the analysis quantify scientifically the differences between horses but also response on training, shoeing, nerve blocking, medication and other things.



2. Rein tension sensors

Menke Steenberg - IPOS technology

www.ipostechnology.com

The system consists of two rein sensors that are placed on the left and right side between the bit and the rein. Amount of pressure that is applied on the bit as well as contact, straightness and lightness can be measured. By analyzing the pattern the software is able to calculate your contact weight, your horse's own pressure and your inputs to your horse.



3. Heartrate monitor

Cees van Beckhoven- Hylofit Heartrate Measurement

www.hylofit.com

This system is a wearable device for horse and rider that tracks performance and provides insights to improve training results and promote the overall health and wellbeing of a horse. By tracking the heartbeat consistently a rider can get more insight into whether the horse is stressed or in pain and track the training successes.



4. Saddle pressure mat

Linda Roost- Paerd, Saddlemeasurement

www.paerd.n

This system is a pressure mat -Novel Pliance® -that can be placed under the saddle and will detect the pressure under the saddle. A pressure measurement with this system will give scientifically validated insights into the pressure distribution under the saddle during riding. Through images and analysis the pressure mat will show where potential problems lie and can help with finding a solution. It can of course also measure the pressure of different saddles and different saddle pads as well as different riders.



5. Non-invasive measurement of stress hormones

Dr. Konstanze Krüger- FH Nürtingen Geislingen

In this workshop Dr. Krüger will explain the method of non-invasive measurement of stress hormones and discuss with the students in which cases what kind of samples have to be taken. On top of that you get to practice taking samples correctly and get to see and use some of the laboratory equipment and results. She will also present some results of previous studies.



Our partner companies/ speakers

Here we would like to introduce a few companies that have helped us to make this day possible.

Dr. Konstanze Krüger

Konstanze Krüger is a Professor for Equine Management at Nürtingen-Geislingen University. She studied Veterinarian Medicine at the L-M-University of Munich, Germany. From 1999 -2005 she managed a riding school together with her husband in Regensburg, Germany and restarted a scientific career at the Zoological department at the University Regensburg in 2005, where she finished her habilitation on the topic : "Social Learning and Cognition in Horses" in 2011. From 2012 on she holds a lecturer position at the University of Regensburg and a Professorship at Nürtingen-Geislingen University. Her research topics are: a) the cognition of horses, especially social cognition and social learning, b) the welfare of horses, especially stress and laterality as a parameter for cognitive functions and the wellbeing of horses, c) the ecology of horses, especially group housing and since 2017 the topic "Wolf and Horse".

PAERD

Paerd, Professional in Applied Equestrian Research and Development is owned by Linda Roost MSc.

The aim of the company is to close the gap between science and practice by performance of applied research.

For optimal performance and welfare of the horse, it is very important to enable the horse to move free from pain and discomfort. Therefore, in the ridden horse we have to raise awareness on the influence of the saddle and rider. Visualisation is a very helpful tool to raise awareness and educate future professionals. By use of the Novel Pliance[®] saddle system we are able to show riders, saddle fitters, trainers and other professionals the influence of saddle fit and rider ability on the horses' back in real-time. So while you are riding we can see what kind of pressure (quantity and distribution) is present on the horses' back and how it can be improved.

I cooperate with saddle makers and fitters, veterinarians and physiotherapists on site who are all searching to find the right solution for each individual horse. Meanwhile, I use the data to perform additional research on horse-rider interaction.

In addition I cooperate with several researchers, developers and practitioners to find solutions for analyses of the bigger picture.



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HYLOFIT

The Hylofit System — Maximize Performance and Wellbeing with Heart Rate Training



Heart rate is an important indicator for measuring and understanding the emotional and physical state of the horse. With the release of Hylofit, an innovative wireless monitor for horse and rider, tracking and recording real-time heart rate is easier than ever, resulting in better training decisions and stronger communication between equine and human.

The Hylofit System is comprised of wearable technology for horse and rider along with an intuitive smartphone app that delivers valuable insights for understanding the impact of rides. The unobtrusive Hylofit girth attachment captures the equine heart rate in real-time and the app stores historical training data for long-term analysis. Rider heart rate is captured through a standard chest strap or through the Hylofit app on Apple Watch.

Hylofit is dedicated to delivering technology to build a stronger connection between riders and their horses. Hylofit will be available for purchase this November. www.hylofit.com

IPOS TECHNOLOGY

IPOS Rein Sensors for Equestrian Sports, Technology to accelerate Equestrian Performance

Horse sports are all about ambition. Riders spend hours on training always looking for ways to improve. IPOS is the front runner worldwide in developing rein sensor solutions, giving riders the competitive advantage they seek.

IPOS introduces a small sensor that sits in between the bit and the rein, it registers how the rider communicates with the horse. It provides real time information on symmetry, intensity and lightness in each training session. IPOS has been developing rein sensors since 2012. Based on our experience we are able to translate data into useable information to riders using smart algorithms, launching our first commercial sensor in the spring of 2019.



Knowing that many sports have benefited from measuring performance, equestrians are the next in line to enter the era of sports technology as well. With an increasing public focus on animal welfare, IPOS not only aims to serve the interest of 16.9 million riders in helping them to become great, we also monitor the health of the horse, detecting possible injuries at a very early stage, enabling riders to take optimal care of their horse.

For this IPOS has been awarded IPOS has been awarded with the Dutch Sports Innovation Award 2017 and the Global Game Changer in Sports in 2018.

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EQUIMOVES

Every horse has its own natural movement characteristics, such as stride duration, speed and stride length. Traditionally, scientists had been able to evaluate the movement of horses visually. But the human eye is only capable of registering images with a frequency of 20 Hz. This makes the human capacity for assessment insufficient in order to arrive at a consistent and objective evaluation of the functioning of the horse's locomotor system, especially when diagnosing lameness – much less when predicting a horse's performance.



EquiMoves

EquiMoves is a system based on a network of wireless inertial sensors to help equine vets in early detection of lameness, the most costly health problem for the horse industry. The wireless sensors act as mobile measuring units attached to the legs of the horse, the withers, head, sternum and sacrum. The movement coordination, temporal and spatial gait parameters are extracted from the wireless signals retrieved in all gaits of the horse. The EquiMoves analysis toolbox quantifies scientifically the evolution of a horse's gait, the progress of lameness, as well as its response to training, shoeing and nerve blocking.

EquiMoves system aims to support equine veterinarians in assessing lameness and gait performance in horses. The system works by capturing horse motion from up to eight synchronized wireless inertial measurement units. It can be used in various equine gait modes, and analyzes both upper-body and limb movements. The validation against an optical motion capture system has been done at University Utrecht (<https://www.mdpi.com/1424-8220/18/3/850>).

We have done some research at the instrumented treadmill at the University of Zurich (see enclosed photo) and last years we measured about 50 Icelandic horses in all gaits at Iceland. Future results will be published together with Holar University, Iceland and Swedish University of Agricultural Sciences. Recently some abstracts of our research has been accepted for the ICEEP (International Conference on Equine Exercise Physiology).

Recently Paso fino horses have been measured in Colombia with the EquiMoves kit. The goal of this research is to find differences in the movement coordination between two types of Paso Fino horses and trying to find a correlation with the genome of these horses.

EquiMoves is a product of Rosmark Consultancy , University of Utrecht and Inertia Technology.



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And our sponsors

**Hendriks Sporthorses &
Hendriks Equine Landscape**



PAVO Horsefeed



Q4 Profiles



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