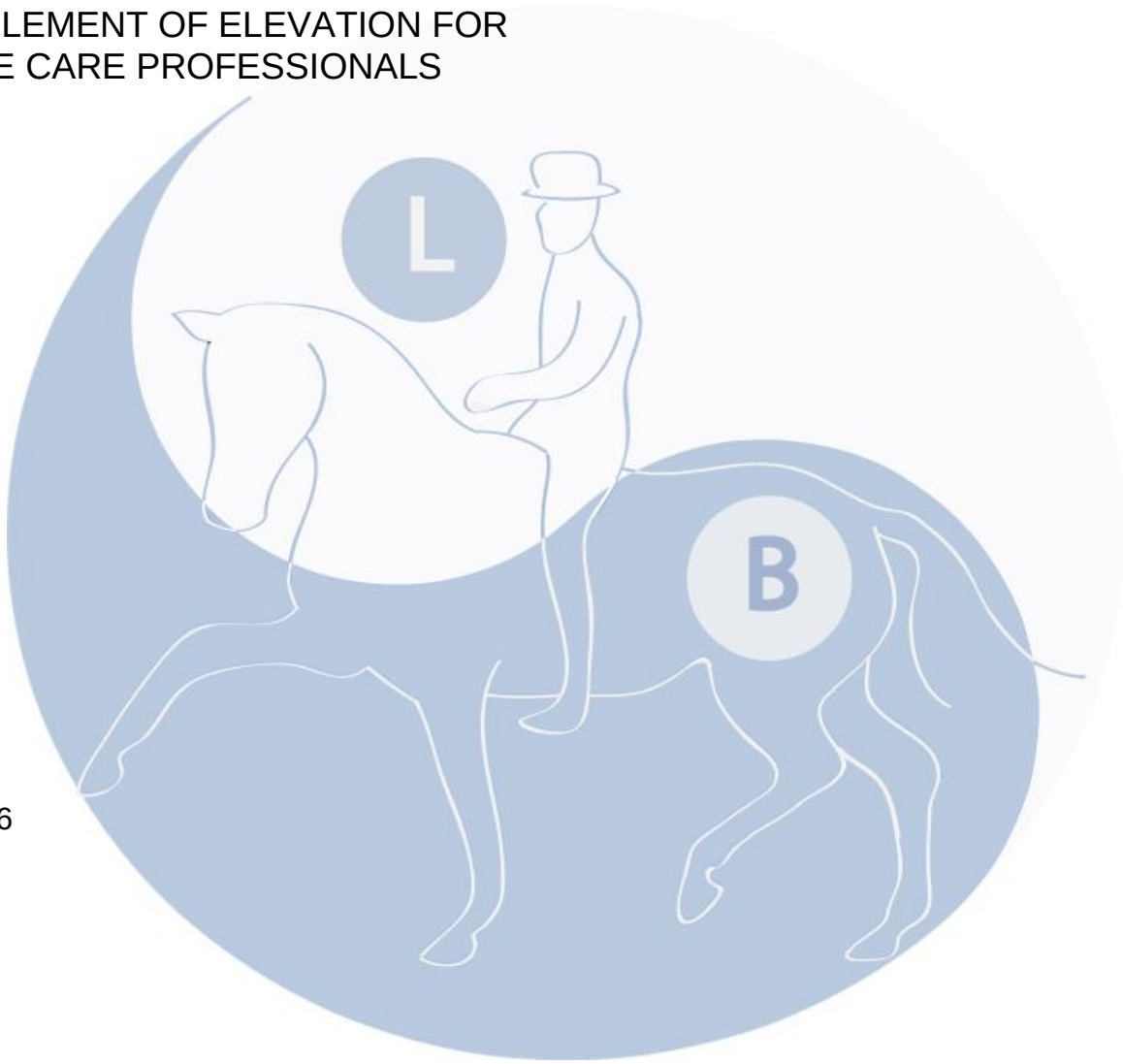
KARELIA UNIVERSITY OF APPLIED SCIENCES
Degree Program in Design

Sara Helinä Vuoristo

AN IMPLEMENT OF ELEVATION FOR EQUINE CARE PROFESSIONALS



Thesis
May 2016

Karelia
UNIVERSITY OF APPLIED SCIENCES

THESIS
May 2016
Degree Program in Design

Tikkarinne 9, 80220
JOENSUU, FINLAND
+358 1326 0600

Author(s)
Vuoristo, Sara Helinä

Title
An Implement of Elevation for Equine Care Professionals

Abstract
This paper has been written to create a functional and beautiful piece of a product to fill a gap in-between equine professionals and their wellbeing, ergonomics and a better level of quality at work.
This work consists of background theory and field work design discussions. The last part is a prototype in its real size.

The product resulting from this process is a platform for people who work with horses. Especially musculoskeletal therapists need to be able to stand high enough to maintain a neutral ergonomic body posture with an object that is safe for them and safe for the horse.

The platform has been designed with user-centered design techniques with veterinarians specialized for physiotherapy and osteopathy. The author has been abroad in Austria during the whole process.

Sara Helinä Vuoristo
Ergonomic Product Design
Karelia UAS, Finland
sarahelinavuoristo at outlook

Language	Pages 54
English	Appendices 3

Keywords
Ergonomics, Ergonomic Product Design, Equine Health and Care, Equine Professional, Product Development, User-centered design

Karelia AMMATTIKORKEAKOULU

OPINNÄYTETYÖ
Toukokuu 2016
Degree Program in Design

Tikkarinne 9
80220 JOENSUU
+358 13 260 600

Tekijä(t)
Sara Helinä Vuoristo

Nimeke
Korkeutta lisäävä apuväline hevosalojen ammattilaisille

Tiivistelmä
Tämän projektin päämääränä on ollut luoda käytännöllinen ja hyvännäköinen apuväline tuomaan ergonomiaa, hyvinvointia ja sitä kautta parempilaatuista työntekoa hevosammattilaisille.
Työssä on käsitelty perustietoa projektia koskettavilta aloilta. Lisäksi varsinainen muotoilu on tehty käyttäjäryhmän kanssa yhdessä suunnittelemalla ja keskustelemalla. Työn viimeisenä osana on rakennettu tuotteesta oikeankokoinen prototyyppi.

Projektin tuote on hevosten kanssa työskenteleville ja asianmukaisiin olosuhteisiin eritoten tuki- ja liikuntaelimistön huollon ammattilaisille suunnattu koroke. Tuotteen tarkoituksena on luoda tarpeeksi korkea alusta manuaalisia tekniikoita käyttäville terapeuteille, jotta he voivat työskennellä ergonomisesti neutraalissa kehonasennossa joka on turvallinen sekä käyttäjälle että hevoselle.
Alusta on suunniteltu käyttäjälähtöisen muotoilun tekniikoilla fysioterapiaan ja osteopatiaan erikoistuneiden eläinlääkäreiden kanssa. Työn tekijä on ollut Itävallassa koko prosessin ajan.

Sara Helinä Vuoristo
Ergonomic Product Design
Karelia AMK, Joensuu
sarahelinavuoristo at outlook

Kieli
Englanti

Sivuja 54
Liitteet 3

Asiasanat
Ergonomia, Ergonominen Tuotemuotoilu, Hevosalan ammattilainen, Hevosen terveys ja -huolto, Käyttäjälähtöinen Muotoilu, Tuotekehitys

Abbreviations

BHS AI	British Horse Society´s qualified Assistant Instructor
BSc (Hons)	Bachelor in Science with Honours (better than average)
ESMA	Equine sports massage association
EMT	Equine Musculoskeletal Therapist, official term for a horse massage therapist
IRVAP	Institute of Registered Veterinary and Animal Physio-therapists in UK
ITEC	International Therapy Examination Council
MIRVAP	Member of Institute of Registered Animal and Veterinary Physiotherapists
MNAVP	Member of National Association of Veterinary Physio-therapists
NAVP	National Association of Veterinary Physiotherapists
MSD	Musculoskeletal Discomfort
Ost PGDip Animal Manipulation	Post Graduate Diploma in Animal Osteopathy
PGDip Vet. Phys.	Post Graduate Diploma in Veterinary Physiotherapy
PVC	Polyvinyl Chloride (synthetic plastic polymer)

Contents

1 Introduction

Two years ago the author of this thesis followed the work of an equine massage therapist. The masseuse applied various techniques on the muscles of the horse, who gave an impression to be asleep because he was so relaxed. The masseuse however was struggling for having her shoulders physically on the same level or lower with the treated muscles. That created a need for additional effort, awkward positions for the wrist and a thinned amount of techniques to use. When a massage is applied on a human they lie down, not because it is more comfortable for the patient but because it allows the massage therapist to be able to do his or her job. The horse was an average size of a dressage mare (approximately 172 cm) and the masseur was only a little taller (approximately 177 cm). The issue is not revealed with the measurements for the reason that horses are not measured from the top of their head and they have yet more height on several muscles to treat higher than their announced height. The therapist carried out the massage standing on a small stool. The stool was collapsible, made from plastic and appeared to have been used for a couple of years which is probably why it was about to fall apart.

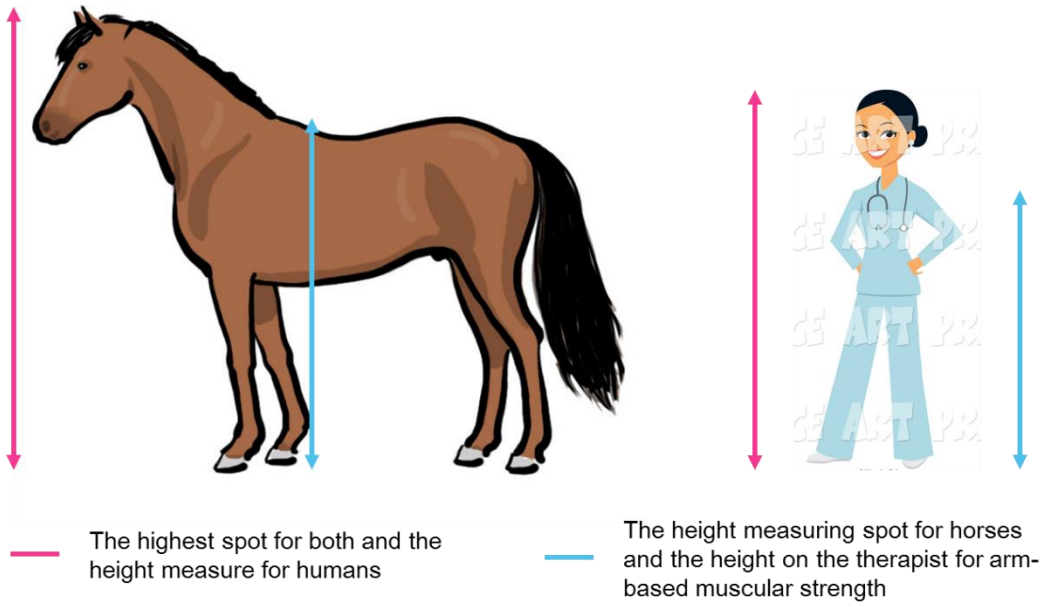


Illustration 1. An illustration to explain the body position without an appropriate elevation (Clipart & the author).

The thesis author followed the therapy procedure the same way as many times before. This time however she had a different point of view: a designer´s point of view. She started to focus less on the techniques, changes of postures and target muscles of the masseur, the reactions of the horse and the names of the muscles, and more on the fact that the masseurs ability to perform could be improved remarkably by giving her a different kind of stand. The ergonomic principles are not fulfilled, not to mention comfort, if the techniques have to be applied with a too low elevation or without elevation at all as can be perceived on the illustration 1. Most of these therapists seem to use an object with maximum 40 cm of height. The horse´s back is ideally about 76 mm lower than the elbows of the massage therapist (Canadian Centre for Occupational Health and Safety 2016). This target is not fulfilled even for a tall person on 400 mm of height. The stable was a big place and one day of work contained a massage for four to five horses. One can roughly imagine the state of fitness the people on this field must maintain, especially with a lack in equipment. Concretely providing a solution for the necessity would be exactly what the thesis author wanted to do.

Practicing veterinary science requires a high level of education for skills that need to be maintained regularly both physically, educationally and philosophically. Veterinary science has been a profession for a very long time. Regardless of lack in equipment the mentioned professionals have practiced their profession with success and development. This dissertation is made for the creation of an equipment of elevation to be used by equine professionals. The group of professions on the side of veterinarians contains equine chiropractors, equine osteopaths, equine massage therapists and equine physiotherapists. According to the policies in many European countries a degree in equine veterinary science, or a Bachelor in Science is required to become an equine chiropractor or physiotherapist and a degree of human massage therapist is required to become an equine massage therapist. There are exceptions in some countries. For instance in Finland studying solely to become a horse masseur is possible and there are no requirements regarding university education.

The main user group for the thesis product is the equine massage therapists due to the focus on muscle manipulation and the need of constant physical strength to be used in completing the treatment. A massage therapist carries out his or her work standing beside the horse throughout the whole treatment. Additionally, he or she could stretch the horse´s feet or manipulate other low parts for which an elevation is not needed. Equine chiropractors and osteopaths treat the joints and the bone structure of a human or an animal. The other users are private horse owners and the horse caretakers working in stables taking care of the horse´s daily needs. There are several little tasks where elevation is needed to take care of things such as braiding the mane for competitions, cleaning the eyes or treating any possible infection or scrape on the facial area of the horse. Medicating can be a task for several times during several days and may be exhausting for the caretaker in case the patient does not agree on the treatment.

It has been impossible to uncover information about the amounts of people working on the mentioned fields. There are no specific national associations to keep track of all of the people holding the specific degree in the country, apart from the veterinarians. However there are several educational institutions, for one the massage therapy schools, that hold a list of their certificated professionals, in other words there are as many lists as there are institutions that the people have graduated from. On the fields discussed the veterinarian is in a way the base degree, and the requirement to accomplish additional degrees on top of it. As an example any animal chiropractor, the limb joint manipulator also has the Bachelor in Science, which is the base, and first half for a veterinary degree. Jani Mikkonen, a Doctor of chiropractic describes the differences between different branches on his page in the following: “After graduating from the basic education every person develops his practice according to his own individual way. This means that there is no one form of chiropractic practice.” (Mikkonen 2015).

Another part of the issue in identifying the numbers is that veterinary science is divided in so many different branches. There are separate degrees to study between small animals, horses and cattle animals, the work as a researcher, with grocery control, as teachers or in governmental positions. The Finnish Veterinary

Association (2015) announces that in Finland there are about 2600 certified veterinarians, of which about 1800 are in working life. According to my own rough interpretation about 800 of them work on animal health care as animal doctors. There is no information available on how many of them are specialized in horses (The Finnish Veterinary Association 2015). For comparison in the United States there are about 111 000 veterinarians, of which 66 760 are in working life. 3880 of them specialize in horses, and 50.1 % of those are women. (American Veterinary Medical Association 2016.) I chose Finland and the USA to show these numbers because Finland is my home country and the USA had the best statistics available. As a small scale comparison, nine out of ten of the professionals who first contacted to join the project are women. Also nine out of ten of them are based in Great Britain.

1.1 My own background

In my work I want to create tools and equipment needed in different fields of work and the base for the design is to fulfil a purpose and a need. I believe the Finnish way to be functional has had an impact, as well as my personality. I have a wide experience and understanding about animals and their behaviour. I have always been occupying myself with some idea or technique for a specific task to be completed. The combination of these two has led me to come up with the idea of my thesis product. The trigger moments happened during the summer of 2014 when I was doing voluntary work in the countryside of Great Britain at a professional stable. They used many different methods in maintaining the wellbeing of the horses on a high level, masseuses and chiropractors were visiting on a monthly basis or even more frequently for the horses that were participating in the competing season. I monitored their work carefully as I did in previous places I have volunteered or worked. This time my viewpoint had been widened by design studies.

I had come up with ideas for equitation and equestrians several times before this because my roots are closely connected to training and raising animals. I have completed a Horse Riding High School education which teaches the sport of equitation in practice and the theory of our companions as athletes and animals. I

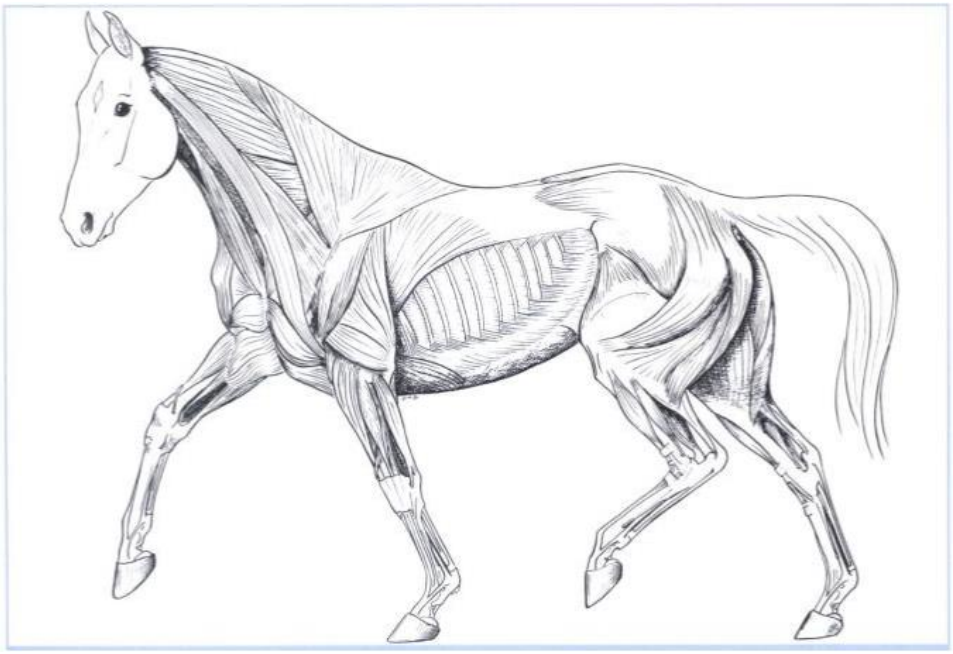
was especially fond of the courses about anatomy. Before high school I was the first of my family to get in touch with the circles of horse society and nowadays the whole family is studying or working in the related fields. There is a saying that horses are a way of life which is certainly true. Inconsistently my studies have greatly affected my way of life as in taking most of my time for the past few years. I am very happy to bring this learning phase to an end. This thesis combines the two passions of mine: design and horses, even though the design is mainly made for humans. Macnab (2012, section one) states pertinently: “As designers, one of the most gratifying things you can do is apply your skills to work that is personally meaningful”

1.2 Equine anatomy and massage therapy

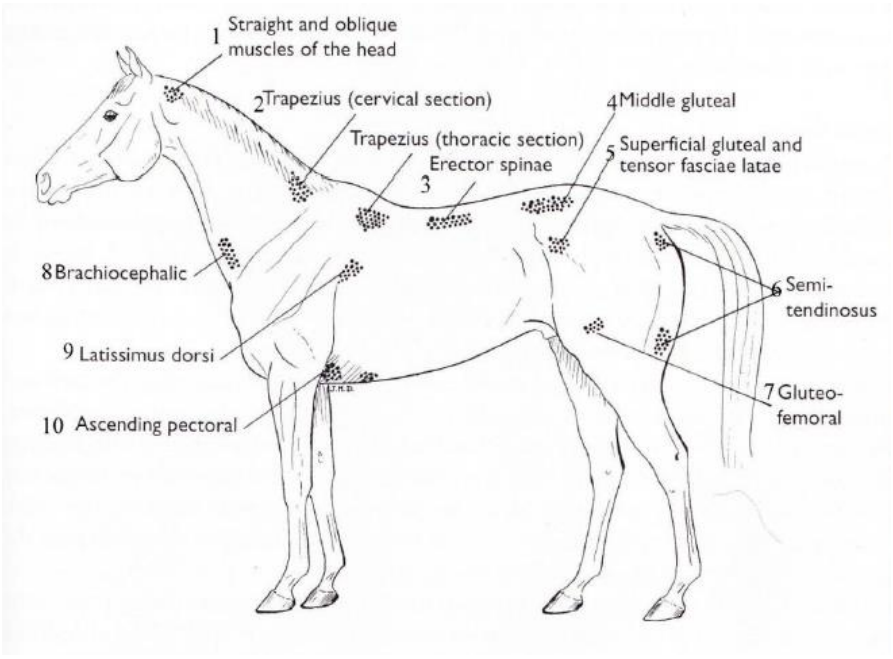
Härkönen (2012) explains that the purpose of massaging is to restore and maintain the functioning of the musculoskeletal system. According to Alanen (2004) quoted here from his student Härkönen (2012, 11) the effects taking place in the body of a horse are the expedition of metabolism, lymphatic and blood circulation, the increase of elasticity and resilience, better recovering and exiting of metabolic waste and the decrease of stiffness and tumescence. The massage also either chafes or relaxes the nervous system. According to Scott and Swenson (2009) massage additionally increases the range of motion and stride length and reduces the activities of nociceptive pain receptors and physiologic stress responses. These are solely the physical impacts. The impacts and benefits for the psyche are most likely as wide as for humans, but in horses a study extensive enough has not been done yet.

Below Denoix and Pailloux (2001) illustrate their views of the horse´s apparent musculature and the main spots on which the muscular tightness occurs the most commonly (Pictures 1 and 2). According to the mentioned authors athletic success is based on talent, hard work, methodical approach and resources for prophylactic and therapeutic medical environment. Physiotherapy is central in this process since it is the field of threating the muscles involved in sports. It would be highly informative to show the techniques used to treat the muscles on this thesis but in my opinion the topic requires rather a video than a picture. I suggest

that each reader that has not been to a massage treatment books a time to receive an introduction into it, certainly for research purposes.



Picture 1. Superficial musculature of the horse (Denoix & Pailloux 2001).



Picture 2. Common spots of tension (Denoix & Pailloux 2001).

2 My methods, concepts and topics

2.1 The project framework

My framework contains the related fields as seen from the illustration (2) below. Ergonomics is the main aspect in addition to the target users who are working with me in the design process. I need to consider the horse and the equine care worker equally. The use will be closely connected to the presence of the horse that simultaneously results in the suitable features and safety of the product to be the essential targets in this project. In the sense of design I learnt that my product is more engineering than design: it is made solely to be functional and represents straight lines to fulfil its purpose. The characteristics of the professionals working on the related fields reveal the core feature appreciated above all else to be the functionality.

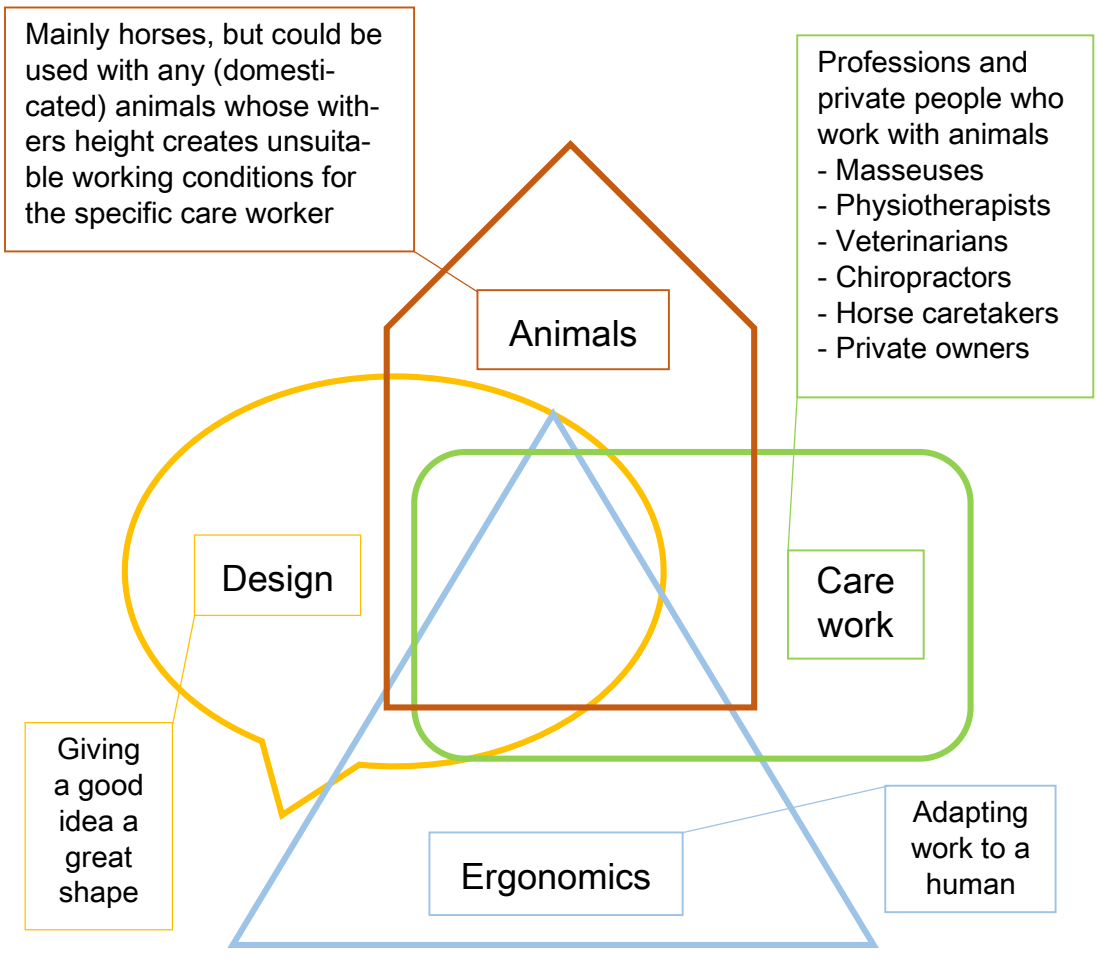


Illustration 2. The associated fields of this thesis (the author).

Horses are fleeing (or getaway-) animals and herbivores, which are designed to escape from danger, and graze on the fields for most of their time among wandering, playing and sleeping in their few hour time slots to wake up again. They need to be alert all the time. It is in their unconscious to react by wincing, by stopping every few meters when approaching the unfamiliar or even running away. However they are curious animals that often want to find out what was it that they felt, saw or heard making them confused or scared. For these reasons it is sometimes hard to understand the reasoning of horses, but a human does not need to worry about getting eaten. Horses are often considered as easily scared animals, which might be true for every horse that has not got the chance to form a trustful relationship with either a caretaker or the rest of the horse pack. A horse always asks his pack leader what to do in the moment of distraction or crisis, but if he does not trust anyone he will leave the scene terrified with a lot of speed and power. That reveals a bit of a horse´s core being in order to understand what assets are needed for working with them.

2.2 User-/ client-centered approach

Shaw and Strong (2008) define the client-centered practice to be the co-operational understanding between a therapist and the client using the therapist´s skills and resources to reach the client´s occupational performance goals. Shaw and Strong are discussing the topic in musculoskeletal therapies and I apply it for design. In this case I am the therapist and the equine professionals are the clients or users. The method is to include the user into the design process as a supporting designer to achieve the best possible solutions. Based on the user´s experience and knowledge they are associated in decision making within the process. The purpose of user-centered practices is to have an end result (design) that meets the user´s needs as well as possible. Enhancing wellbeing, occupational performance and health are the goals of user-centered practices. Understanding and respect are the two fundamental elements for the practitioner to maintain in order to truly have the ability to implement user-centered practice. (Shaw & Strong 2008, 20-22.)

User-centered design is the main method in the process of this thesis. This way I could get to know the matters beneficial for product development in order to design a relevant and wanted object. One of the beneficial elements is getting to know the users professionally and as human beings to understand how each of them wants and prefers to work. Moreover familiarizing with the users transforms the product to having a heart, because it has been created with a group of people who put their hearts into their work. It is not only a designed product but also a product that the users would have made if they were designers. User-centered practices hold a commitment of focusing on matters that denote the greatest importance to the user and achieving that by putting into operation the time and resources effectively (Shaw & Strong 2008, 18).

2.3 Ergonomics

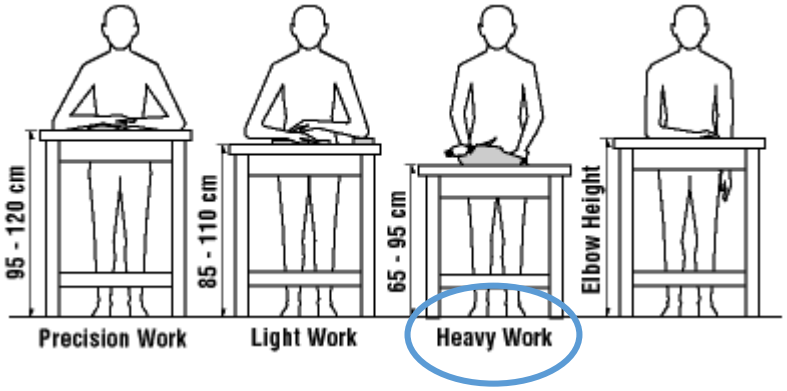
Ergonomics is every form, feature and planning that is done to make a specific work to suit for a human or to a human as best as possible. In order to enhance ergonomics at work there are recommended working positions, ancillaries, taking features into account in designing work places and tools, et cetera. Ergonomic solutions are used to minimize obstacles and time consumption between work and employee, which results in the employee´s better wellbeing at work on both physical and mental levels. The employee who is comfortable at work will be able to work sometimes years longer than the ones without the benefits ergonomics can bring (Väyrynen, 2004). On their web pages International Ergonomics Association IEA describes Ergonomics as the link to harmonize interaction involving human with objects, services, programs and any other things that are designed (Picture 3). People have needs, limitations and abilities that are above outlook and other features in products.

Ergonomics is divided in three fields: physical, cognitive and organizational. Physical ergonomics contains the anatomical, anthropometric, physiological and biomechanical characteristics in physical activity. Working postures and workplace layout are examples that concerns physical ergonomics. Cognitive ergonomics refers to the processes in our mind, such as perception, memory, reasoning, and motor response. In short it equals to all interaction between a human

and a system but furthermore to decision-making and stress. Organizational ergonomics concerns the optimization of sociotechnical systems, their organizational structures, policies, and processes of which are for example quality management, communication and the design of working times. (IEA 2016.)

Picture 3. Ergonomics can be everywhere (IEA 2016).

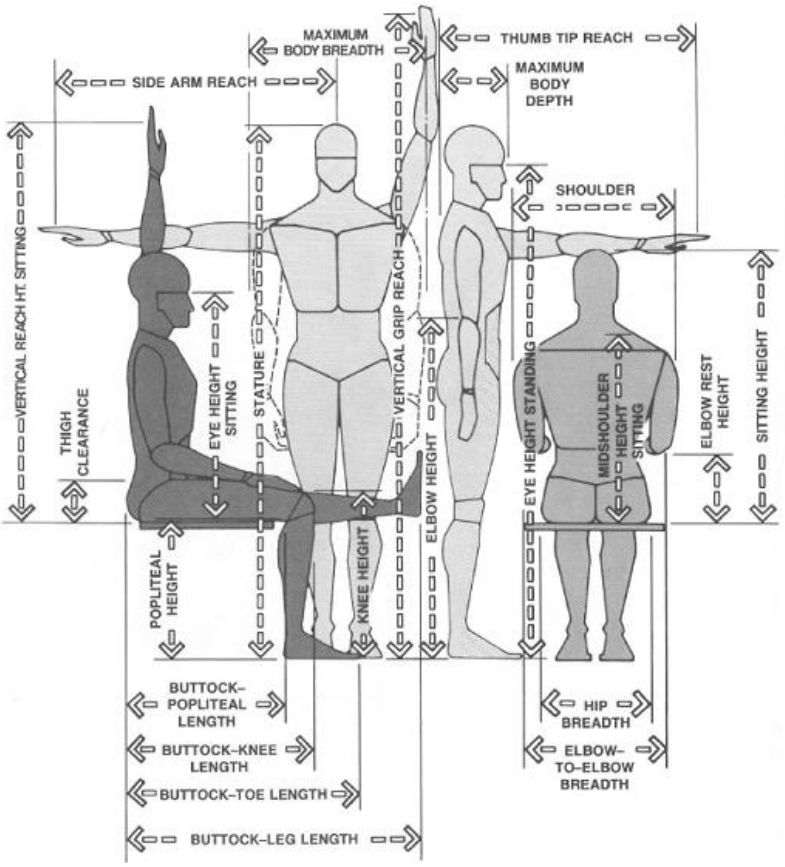
The issue the equine care professional faces at work is when the treatable spots are located higher than the person can apply strength from her shoulder height in an ergonomic way. As is illustrated below (Picture 4) the ergonomic way in practice stands for a correct height of elbows (65-95 cm from the ground for heavy work while standing) and the extended reach or the distance from the person herself (25 cm and occasionally 50 centimetres). The position of elbows should be relaxed straight down on the side of the body. However, the nature of manipulating muscles and joints does not let a space to fully apply ergonomics. The ergonomic position described above is known as ´the neutral position´ and it is the recommendation for all the limbs and body parts to hold in both physical and sitting work. (Canadian centre for occupational health and safety 2015.)



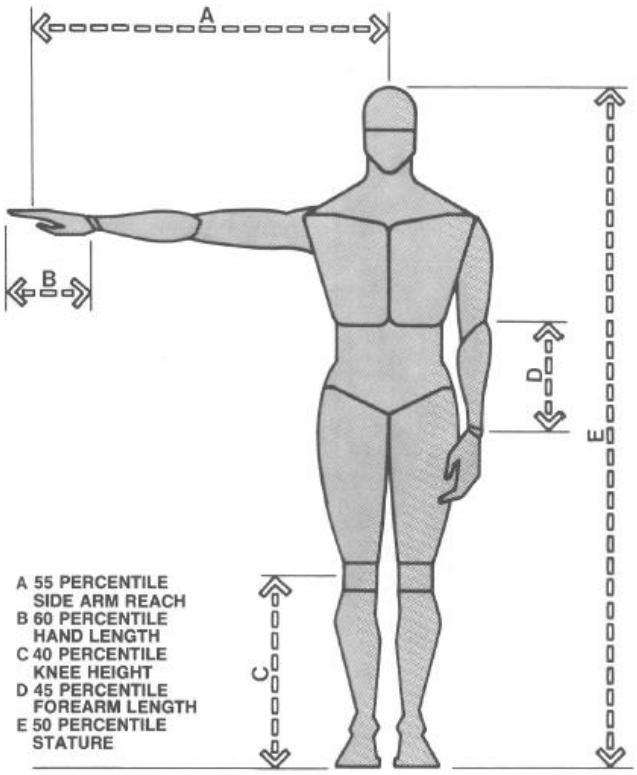
Picture 4. Ideal working heights in standing position (Canadian Centre for Occupational Health and Safety 2016).

2.4 Anthropometry

Anthropometry is the science behind human body dimension and it is to be used in the design of everything: airplanes, doors, pencils, and any object or a group of objects that will be partly or completely used by a human. However, anthropometry is not purely the data of body dimension. It has many complicating factors such as the fact that the body dimensions change over the years and it occurs differently in different parts of the world. Additionally gender, age, race and occupational group affect the changes. (Panero & Zelnik, 1979, 23-30.) Picture 5 shows the most important measures for the use of an interior designer. In the design of this thesis project the gathered information has been considered and roughly applied for the reasons that the data of the trustworthy sources I found is gathered mainly in army bases and not in veterinary schools.

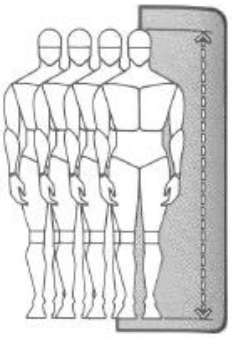


Picture 5. Body measures for designers (Panero & Zelnik 1979).



Picture 6. Nobody is perfect (Panero & Zelnik 1979).

There is a significant variation in individual body size which is the reason of the development of a system called percentile groups. Instead of using ´averages´ of body dimensions the use of percentiles, specific ranges of measurements is the scientific way to choose measurements. Statistically the body measurements in any human population are distributed so that a major percentage will fall in the middle and a small number of extremes fall at either end of the spectrum. It is impractical to design for the entire population and for that reason a segment of 90 percent is often chosen depending of the nature of the users. Additionally to be said that humans are not evenly distributed in all their body dimensions and person with a 50th percentile stature may have a 55th percentile arm reach as illustrated on picture 6. (Panero & Zelnik 1979, 34-36.) The body percentiles can be checked on picture 7.



STATURE

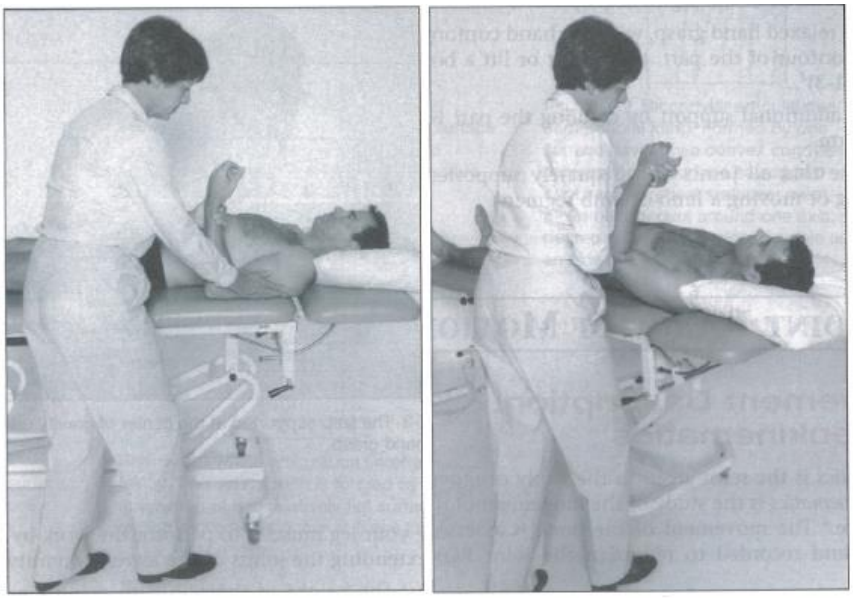
Adult Male and Female Stature* in Inches and Centimeters by Age, Sex and Selected Percentiles†

		18 to 79 (Total)		18 to 24 Years		25 to 34 Years		35 to 44 Years		45 to 54 Years		55 to 64 Years		65 to 74 Years		75 to 79 Years	
		in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm
99	MEN	74.6	189.5	74.8	190.0	76.0	193.0	74.1	188.2	74.0	188.0	73.5	186.7	72.0	182.9	72.6	184.4
	WOMEN	68.8	174.8	69.3	176.0	69.0	175.3	69.0	175.3	68.7	174.5	68.7	174.5	67.0	170.2	68.2	173.2
95	**MEN**	**72.8**	**184.9**	**73.1**	**185.7**	**73.8**	**187.5**	**72.5**	**184.2**	**72.7**	**184.7**	**72.2**	**183.4**	**70.9**	**180.1**	**70.5**	**179.1**
	WOMEN	**67.1**	**170.4**	**67.9**	**172.5**	**67.3**	**170.9**	**67.2**	**170.7**	**67.2**	**170.7**	**66.6**	**169.2**	**65.5**	**166.4**	**64.9**	**164.8**
90	MEN	71.8	182.4	72.4	183.9	72.7	184.7	71.7	182.1	71.7	182.1	71.0	180.3	70.2	178.3	69.5	176.5
	WOMEN	66.4	168.7	66.8	169.7	66.6	169.2	66.6	169.2	66.1	167.9	65.6	166.6	64.7	164.3	64.5	163.8
80	MEN	70.6	179.3	70.9	180.1	71.4	181.4	70.7	179.6	70.5	179.1	69.8	177.3	68.9	175.0	68.1	173.0
	WOMEN	65.1	165.4	65.9	167.4	65.7	166.9	65.5	166.4	64.8	164.6	64.3	163.3	63.7	161.8	63.6	161.5
70	MEN	69.7	177.0	70.1	178.1	70.5	179.1	70.0	177.8	69.5	176.5	68.8	174.8	68.3	173.5	67.0	170.2
	WOMEN	64.4	163.6	65.0	165.1	64.9	164.8	64.7	164.3	64.1	162.8	63.6	161.5	62.8	159.5	62.8	159.5
60	MEN	68.8	174.8	69.3	176.0	69.8	177.3	69.2	175.8	68.8	174.8	68.3	173.5	67.5	171.5	66.6	169.2
	WOMEN	63.7	161.8	64.5	163.8	64.4	163.6	64.1	162.8	63.4	161.0	62.9	159.8	62.1	157.7	62.3	158.2
50	MEN	68.3	173.5	68.6	174.2	69.0	175.3	68.6	174.2	68.3	173.5	67.6	171.7	66.8	169.7	66.2	168.1
	WOMEN	62.9	159.8	63.9	162.3	63.7	161.8	63.4	161.0	62.8	159.5	62.3	158.2	61.6	156.5	61.8	157.0
40	MEN	67.6	171.7	67.9	172.5	68.4	173.7	68.1	173.0	67.7	172.0	66.8	169.7	66.2	168.1	65.0	165.1
	WOMEN	62.4	158.5	63.0	160.0	62.9	159.8	62.8	159.5	62.3	158.2	61.8	157.0	61.1	155.2	61.3	155.7
30	MEN	66.8	169.7	67.1	170.4	67.7	172.0	67.3	170.9	66.9	169.9	66.0	167.6	65.5	166.4	64.2	163.1
	WOMEN	61.8	157.0	62.3	158.2	62.4	158.5	62.2	158.0	61.7	156.7	61.3	155.7	60.2	152.9	60.1	152.7
20	MEN	66.0	167.6	66.5	168.9	66.8	169.7	66.4	168.7	66.1	167.9	64.7	164.3	64.8	164.6	63.3	160.8
	WOMEN	61.1	155.2	61.6	156.5	61.8	157.0	61.4	156.0	60.9	154.7	60.6	153.9	59.5	151.1	59.0	149.9
10	MEN	64.5	163.8	65.4	166.1	65.5	166.4	65.2	165.6	64.8	164.6	63.7	161.8	64.1	162.8	62.0	157.5
	WOMEN	59.8	151.9	60.7	154.2	60.6	153.9	60.4	153.4	59.8	151.9	59.4	150.9	58.3	148.1	57.3	145.5
5	**MEN**	**63.6**	**161.5**	**64.3**	**163.3**	**64.4**	**163.6**	**64.2**	**163.1**	**64.0**	**162.6**	**62.9**	**159.8**	**62.7**	**159.3**	**61.3**	**155.7**
	WOMEN	**59.0**	**149.9**	**60.0**	**152.4**	**59.7**	**151.6**	**59.6**	**151.4**	**59.1**	**150.1**	**58.4**	**148.3**	**57.5**	**146.1**	**55.3**	**140.5**
1	MEN	61.7	156.7	62.6	159.0	62.6	159.0	62.3	158.2	62.3	158.2	61.2	155.4	60.8	154.4	57.7	146.6
	WOMEN	57.1	145.0	58.4	148.3	58.1	147.6	57.6	146.3	57.3	145.5	56.0	142.2	55.8	141.7	46.8	118.9

Picture 7. Body percentiles without shoes (Panero & Zelnik 1979).

2.5 The work posture of a manual therapist

Clarkson (2013, 3) instructs in her book about the working postures and palpation methods for therapists. The described position can be perceived on picture 8 which shows a human patient but the same instructions can be applied in treatments for horses correspondingly. The upper body should be straight and feet apart the same width as between their shoulders. The knees must have some flex and one foot a bit ahead of the other to assure a smooth shift of weight toward the direction of the patient according to the suitable treatment methods. The author of the book reminds to avoid spinal extension, flexion and rotation in general for on account of the health of the lumbar spine. The better way to gain the movement of spinal rotation is to rotate the body as a whole by using the feet. Flexion and extension are as a matter of fact very important for the health and functioning of the spine, but one must not apply strength while these movements are ongoing. The aim to maintain is a neutral lordotic posture in the respects it is comfortable and practical. (Clarkson 2013, 3.)



Picture 8. Performing treatment parallel (left) and perpendicular to the patient (Clarkson 2013).

Palpation is the way to assess by feel the state and consistency of soft tissues, for instance the muscles. Palpation is done by fingers which are the ears of a manual therapist. Prior to palpation however there is visual observation which is

an important aid for the quality of the treatment in determining the problems of the patient. Facial expression, symmetrical or compensatory motions, body posture, muscle contours, body proportions, colour and condition are as well to be examined from a horse, certainly with skills in equine communication. Proficiency at palpation is gained through practice and experience. By practicing the therapist can for example determine the presence or absence of muscle contraction and localise structures that require direct treatment. Palpation is often be done by rolling the fingers on the spots of tendons or linear muscles. (Clarkson 2013, 2-3.) Palpation is not treating but a method ´to hear´ what is going on in the body to know the parts that need further treatment.

3 Our discussion, team and design

The discussions were mainly carried out with a popular video call program. Some of the contacts did not have full access to internet, and we only used the program features to chat and send images. The information of updates and all other communication was done via email. The channel to find the contacts for this project was initially done with an advertisement to a British magazine about animal therapies. Three of the contacts contacted me via this paper although sadly one of them had to cancel her participation. We continued with my first two contacts to the interview and they promised to share my advertisement to their networks. I also managed to get the ad shared on a page of IRVAP and afterwards seven new people contacted me to join the project. After contacting me I sent every professional an opening email with four questions that were the basis of our discussions and the starting point of the user-centered design. The opening email can be found in the attachment 1.

3.1 Introducing the team

Laura Batten BSc (Hons), PGDip (Vet. Phys.), MNAVP

The first person who contacted after spotting my advertisement on Animal Therapy magazine was Ms Laura Batten. Ms Batten is a veterinary physiotherapist specializing in horses and dogs. Ms Batten is very professional and friendly and

as a medical expert a good listener as well. I started the design process with her. She works in South Central England and the Channel Islands.

Picture 9. The self-made standing box, Laura Batten

David Powers BSc (Hons), Ost PGDip Animal Manipulation

David Powers has been a great help and support throughout this whole process with his wide knowledge, understanding and down to earth personality. He is an osteopath with a holistic approach in his treatment for both horses and humans. Mr Powers is very popular among his clients, based on the recommendations on the InMotionEquine- web page. He works in the areas of London, Essex, Herts and Surrey.

Picture 10. The toolbox stand, David Powers

Caire Cole ITEC Dip. Equine Sports massage (& MCThA)

Ms Cole is a sports massage therapist for both horses and humans. She is direct and provides very informative web pages and the communication has been clear and consistent. She works in the Eastern parts of England near Ipswich.

Picture 11. Yeti decorator´s platform, Claire Cole

Jemma Marsh MSc (Vet. Phys)

Ms Marsh is a veterinary physiotherapist. She is very straight forward in the communication we have had, and is very focused on her job, based on the perception from her web page. She works in the Western parts of England covering Bristol, Wiltshire and Somerset.

Picture 12. The Lincoln Step, Jemma Marsh

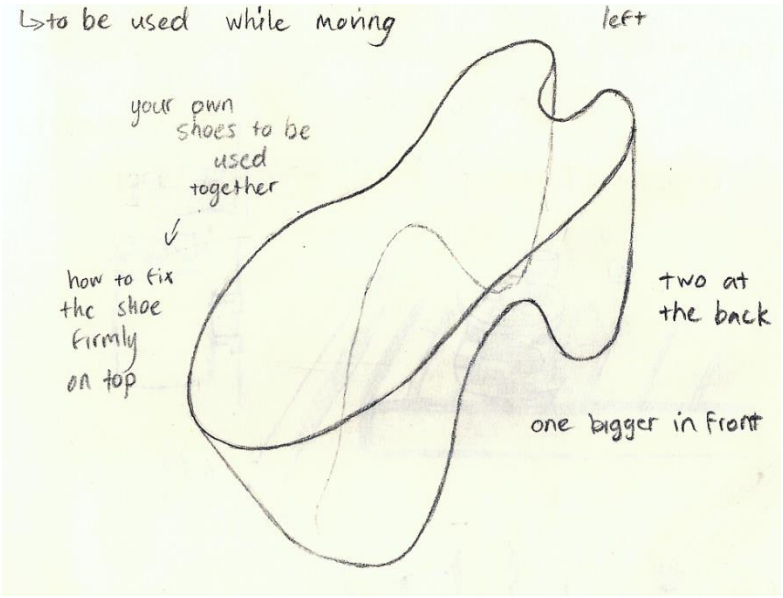
Caroline Lindsay BSc (Hons), PGDip (Vet. Phys.)

Ms Caroline Lindsay is a veterinary physiotherapist who has likely been thinking of an object in question. She is involved in several activities related to animals and her profession and she has an amount of additional qualifications and certificates to her degree. Ms Lindsay has a very wide experience in her field and she knows what features are needed. She works in the North East of England, the areas of Essex, Hertfordshire, Bedfordshire and Cambridgeshire.

Picture 13. The box from massive wood made by a familiar carpenter, Caroline Lindsay

3.2 Starting sketches, ideas and objects

I drew the first sketch (Picture 14) on a very early state of the project and at the time I was still in Finland without understanding about practical matters such as timetables, workshop availability and materials. The object was preferably going to be an applied form of the tracks that were and are used to hold your snow-boarding shoes on the snowboard. This track would have an elevation or heels on both sides of it instead of the snowboard. The idea was based on the target to be able to move with the product on your feet, because it would allow more safety when working with restless or painful horses. Another benefit would have been the ability for a more holistic treatment when the whole treatable area would be on the therapists reach at once. However it is very probable that this way it could have been unsafe as well, because while one needs practicing and skills on the snowboard one would also need it with this product.



Picture 14. The very first product idea sketch.

Every horse stable needs an elevation to use when the horses are being mounted before going for a ride. The mounting steps in question are often self-made wooden structures with various heights, forms and outlooks. Some people mount on the ground but that is increasingly recognized to cause excessive stress for the horse and the saddle whereupon horse riders want to mount on an elevation. The used platforms are various such as on picture 15, a barn ramp made from

concrete and a wooden step that is bought from a hardware store. The mounting steps are generally always too narrow for completing other tasks as the step on picture 15. The brush box on picture 16 can take a weight of 120 kilo but it is primarily a storage for brushes of the horse and it is too low for mounting or massaging.

Picture 15. The two elevations used with horses in the stables of Georgenberg, Austria (the author).

Picture 16. A brushbox step for standing on, sold by Horze LLC (designer unknown).

3.3 The first design discussion

What kind of an equipment do you currently use

The first question on the interview converses on the objects or products the professionals have chosen to use in their daily work. Ms Batten has a wooden box built by her father according to her wishes, with measurements of roughly 55 cm height and 65 times 40 centimetres of depth (Picture 9). The box is quite light

given its height due to its thin walls. A hole for the hand on top makes the box easy to lift and carry. Mr Powers uses a toolbox that is designed for carpenters, electrical engineers and similar professionals to stand on while working on their precise tasks (Picture 10). He says the box is obviously too low for an equine chiropractor but it has a very good structure. He has tried several other products during his career but found them all not stable or strong enough.

Ms Cole uses a large metal platform designed for house equipment to reach better while washing cars or painting walls (Picture 11). The platform is collapsible and this way very easy to fit into the car. Generally she has the platform with her but occasionally she also uses a small plastic grooming box or a bale of shavings. Ms Marsh uses a plastic made small grooming box that is very light and petite structure. The box is closer to the grooming boxes used to store the small objects for treating the horse – and it also works as one (Picture 12). Ms Lindsay uses a small box made out of massive wood (Picture 13) with dimensions of 40 times 40 cm and 35 centimetres of height. The box has been built by a carpenter of their town.

How do you feel about the object

The second question asks what do you like and which features would you like to change in your object. Ms Batten especially prefers her wooden box because it is very safe for the horse and it is exactly done as she wanted. She pointed out that she feels confident to work on it for its suitable height, robust structure and wide area to stand on. However she would like her box to be easier to clean. Collapsibility is one of the most congenial features by the project contacts, as it is hers. On the other hand she said that the object should not be collapsible at the expense of the structural strength. In addition any of the features should not be realised by attaching any kind of clips or bands due to the possibility of the horse or his halter getting attached to them. Mr Powers said that he likes his toolbox for its toughness but more height and better possibility to move around would be on his wish list.

Ms Cole likes the light weight and suitable height of the platform she has. She also likes that it is easily cleaned and feels secure to stand on it. The negative aspects are that the metal as material combined with collapsibility makes it noisy, and spooky for horses. In addition to the mentioned reasons it has smaller and bigger holes that the horse can accidentally attach his body parts or the halter and for this reason it is not very safe for the patients, especially those who like investigating all things that are on their reach. Ms Marsh likes that she can store all her little things she needs for the work in the box she stands on. These things include the massaging oil, ultrasound gel and paper towels. She also prefers the features of the box that it is very light and easy to clean. However the box breaks easily and she has to purchase a new one twice a year. It is not possible to adjust the height, and the standing surface gets slippery when it is wet. She has still been using this box and claimed that it appears to be the only option available.

Ms Lindsay likes her box for its features and because it cannot be broken by horses, or get attached to them. The one and only feature that she wanted to change is the height which is much too low to work with many patients. Otherwise it is a very good box, it is heavy enough not to fall or to break, small enough to be easily taken into the car or to carry and stable enough to stand on. At the end she added she would like the object to be easily cleaned. Wood gathers dust and is rather hard to clean.

Are you aware of a similar object that exists

The third question is about the products on the market of which the contacts might have heard about or seen. For Ms Batten my project is the first product that would be done for the purpose. She claimed that there would surely be a demand for it. Mr Powers said that he would definitely gain benefit from such a thing, and has not heard of anything similar either. Ms Cole has heard of a kind of PVC case which is filled with blocks of polystyrene. This stand has been designed for chiro-practors. It is safe but also spooky and very bulky. Ms Marsh had not heard of a design for equine professionals. Ms Lindsay commented that there is no elevation designed for the medical treatment professionals but there are these boxes for mounting with too small standing area for work purposes.

Keywords for your work conditions

Finally I wanted to know what are the conditions and features the person requires at his/ her work. It was very interesting to see which exact elements (Illustration 3) my contacts choose. Two professionals out of five mentioned that it would be nice to have some space in the object to keep their small tools in. These tools consist of a portable laser therapy machine, an ultrasound machine and some diverse small objects. The size of the laser is about 20 cm x 30 cm and it works with a battery. The ultrasound machine then again often needs to be plugged and its size is about 40 cm x 35 cm x 10 cm. The ultrasound is not used often in the therapy treatments. The most popular feature was safety on the side of lightness to carry, and often the persons chose features that their current equipment is lacking. I could not take this question too seriously because the choice of option when one works on the computer can vary from the choice and the available options in the real situations.

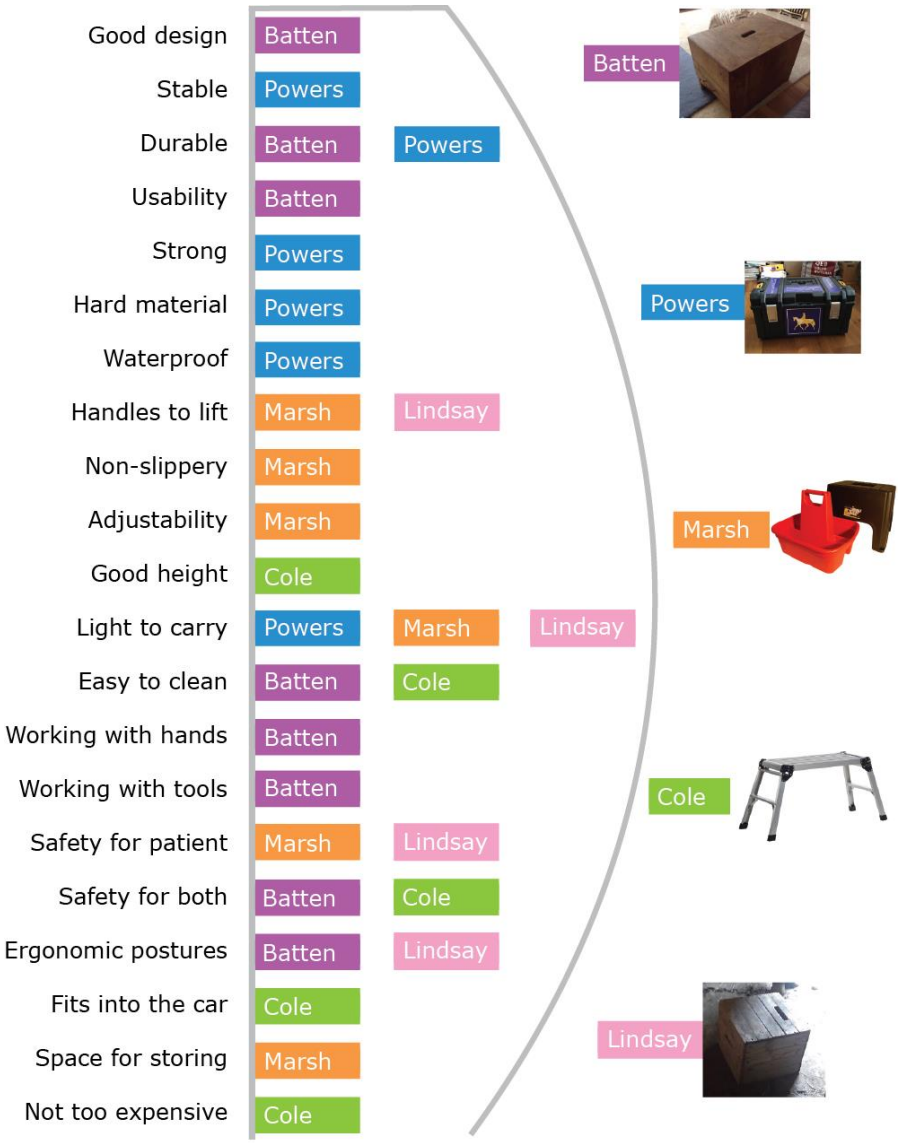
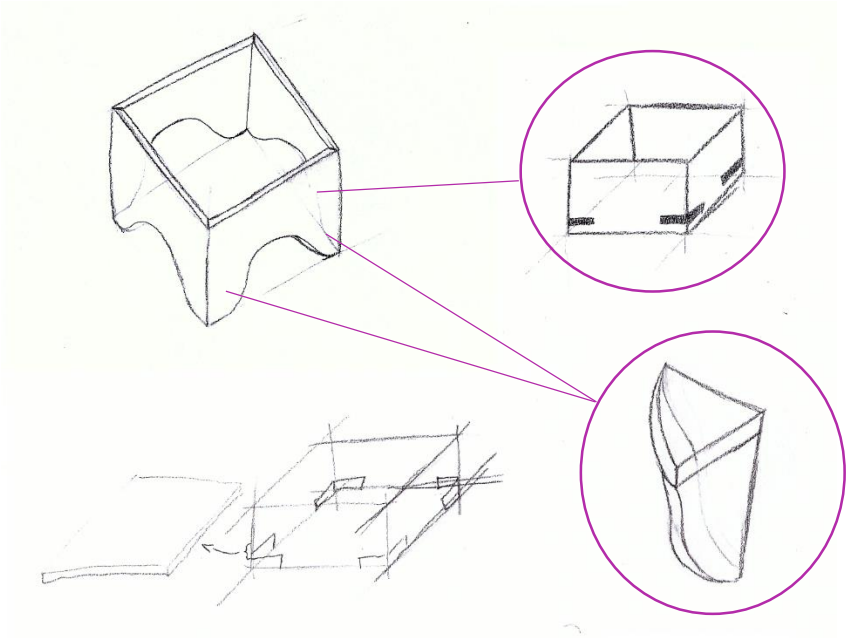


Illustration 3. Preferred features at work and in tools (the author).

After the Interview questions I started sketching to create a design frame that combines together the main points as most important features based on the interview questions. Some of the sketching and ideation for function is shown on picture 17. Initially there was solely a box with feet as in the very first sketch (Picture 9.) but instead of three, there would be four legs. The reason for curve of the feet is the bedding in horse stables used on top of the stall floor to make it easier to place the object on top of as many different kind of beddings as possible. Considering my own background in Finland, the most used bedding is peat. Another common bedding is fine grained wood chewing, and it is very similar to peat in terms of consistence and structure.

Mr Powers told that the most common bedding used in England is the wood shaving, second one would be straw and third one recycled paper. The fact is that all the beddings have one common feature: it does not have equally flat surface and although it is soft, it is problematic to reach a constant and stable surface with a bottom flat object placed on the bedding. The design of my product is mainly considering the structure of shavings and peat specifically in the feet. From paper I do not have any experience. The straw used on the floor of the stalls was one of the reasons to make the lower side of the object to have greater dimension compared to the upper side: this way it becomes more stable.

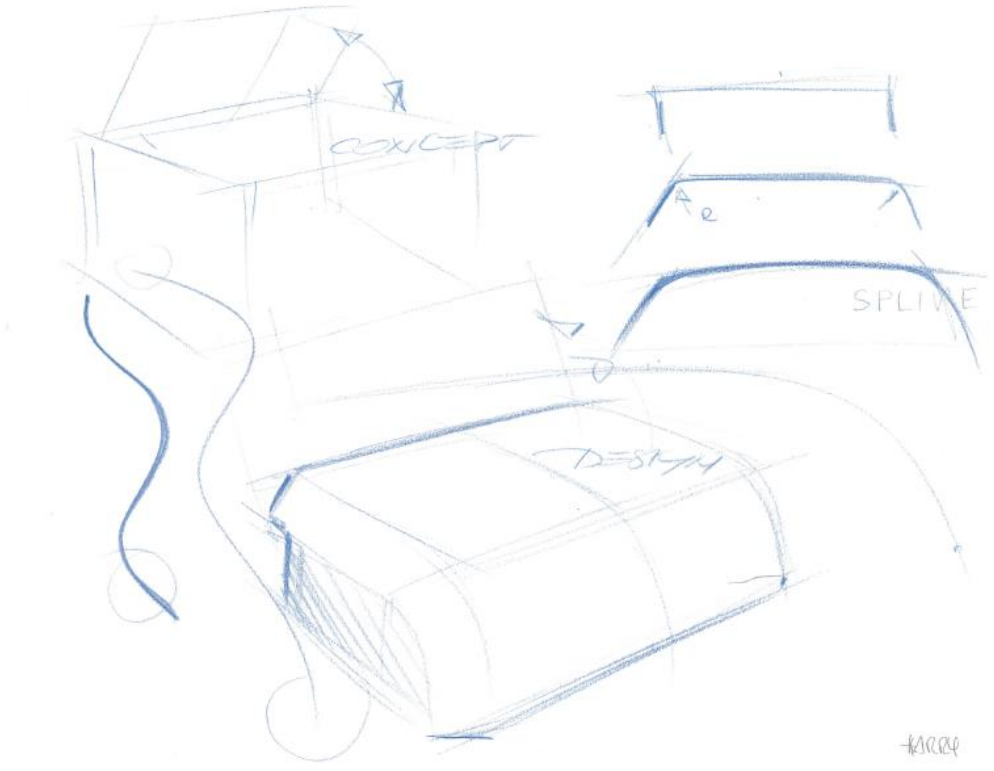


Picture 17. Sketches and ideation in between the interviews.

3.4 The second design discussion

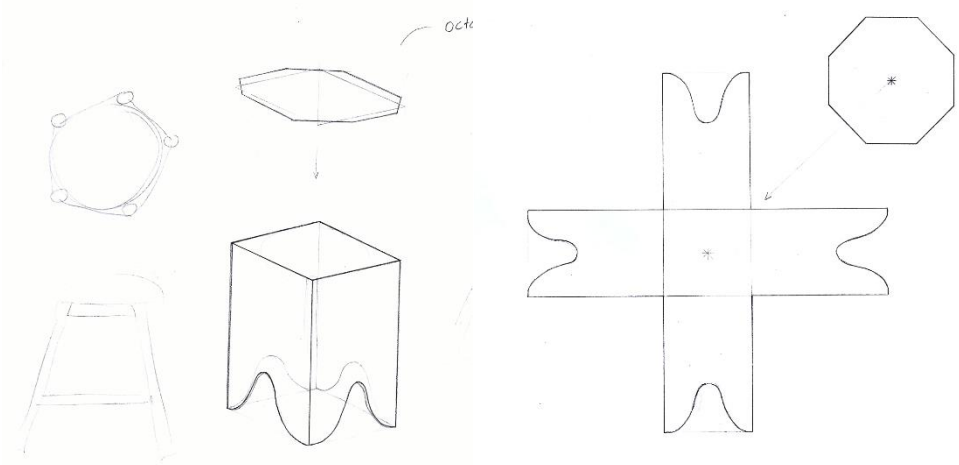
The first feedback came from a discussion with Ms Batten. She said that a box is still the best option, because it is the most logical solution and moreover all the risk elements cannot be eliminated. Ms Batten called for a big box, because large size is a more valuable feature than the ability to fold it. She liked the idea for the feet being mainstays on the corners in the way that prevents the box from falling. At the end of this phase I continued sketching and the design changed to concentrate on the form and simplicity without features of folding, as on picture 19.

I attended on a visual communication course with Mr Davide Tealdi and Mr Harald Koneczny and they saw me struggling with the task, partly because I did not understand and partly because I did not understand. The first one refers to the course task but the second one was a moment of a light bulb lighting up in my mind when these two design lecturers gave me a short introduction about what is design. First Mr Koneczny sketched picture 19 for me and then Mr Tealdi explained it in a language I could understand. Referring to the three different curves on the right: the upper one is an idea or a sketch which has a very rough form and mostly straight angles. The middle one is the engineering that contains already a form, details and rounded edges. The lowest one is the design. It can have splines, arced curves with changing dimensions and its only limitation is what the material defines.



Picture 18. An explanation of the phases of design (Harald Koneczny).

Nevertheless this design process is aiming to create an entirely functional object whereupon the design I created for the course task will not be considered to benefit this thesis project. Although it was a great inspiration, I am happy to know my users and continue with the so called engineering like designing. I talked to some of my contacts about the outlook matter and they rejected it as a point to consider. They want something that works, lasts and fulfils its purpose. Perhaps in the future when the best possible design has been established there will be a chance to design such attribute a bit further.

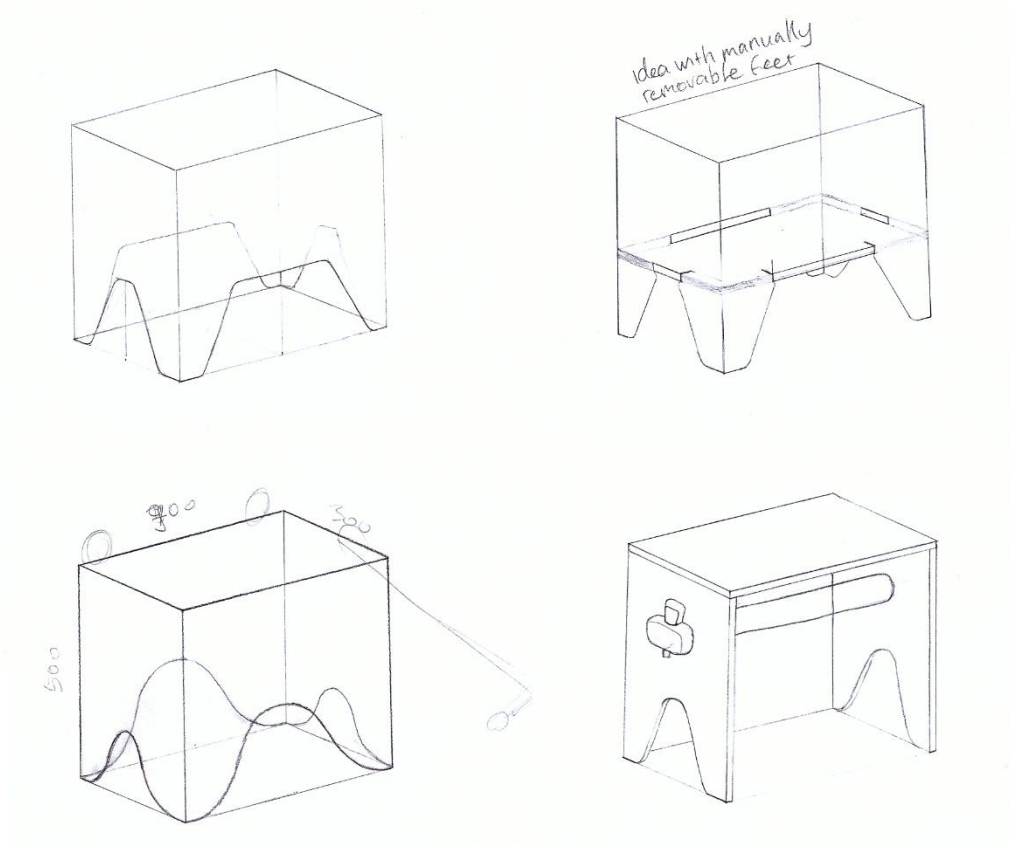


Picture 19. Sketch phase simple stool with an octagon or hexagon shaped possibly removable lid.

3.5 The third design discussion

On the third discussion the participating group member was Ms Cole. She wanted to know if the structure of the box on the sketch is strong enough. The main concern of hers was that the space for the feet was too small. As a matter of fact the intention was to widen it, but I didn´t want to lead the design too much right from the start. This way I got to know concretely what are the really important features the user group is seeking. Ms Cole was keen of the rounded corners on the feet and the lid. She was concerned the feet design might cause the stool to be unstable. Nevertheless that is the reason I chose to make them round on the outer side, and attach as a corner with another wall, because that is going to be stable on any bedding that does not contain straw-like pieces that form a more constant structure. Ms Cole also asked about the weight, price, and surface in terms of cleaning the object easily.

A wide area to move a step on the side is a very important feature when the tool cannot be moved while it is stood on. The massage is aimed to be continuous and move smoothly, and horses are long animals. The distance of the work range for the usage of the stool is the whole upper side of the horse from the highest point of the nape through the neck, upper side of shoulders, back and haunches till the dock. The distance in question can easily reach three metres which is why it is justifiable to have a reasonably long object to stand on. On picture 20 there are the sketches of the different ideas to fulfil the feature of stability on any bedding. The rounded shapes can be very comforting when a sudden change in motion of the horse or loss of balance occurs. They occur in daily life due to long work days and the nature of horses. In other words I wanted to design a box that minimizes the possibility of injuries not only for the horse but for the user as well.



Picture 20. Formulating ideas during the discussions.

At this point opinions and feedback were very hard to receive, assumingly the cause is the load of work that occupies the professionals in question. Instead of

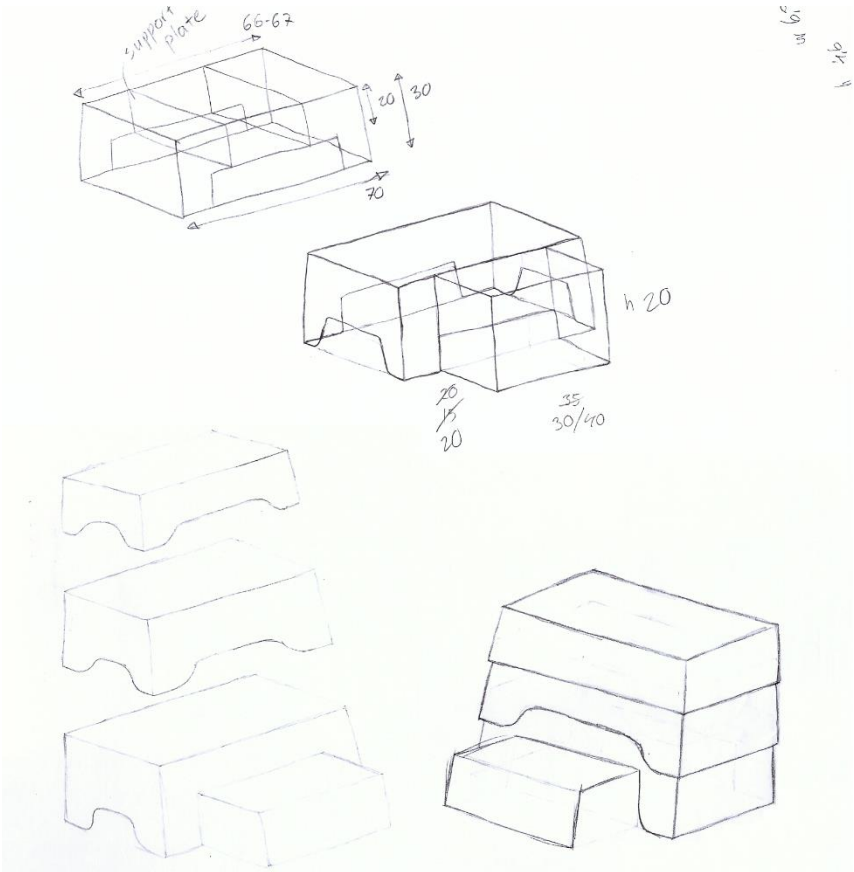
waiting I went to discuss the project with professionals in other fields at the Salzburg University of Applied Sciences, the institution where I have been studying on a few courses during the time of the thesis process. Mr Markus Frauenschuh works at the workshop where the prototype would be built. He understood the idea, shared his opinions and gave a clear list of what was needed to be done. He instructed me to select the exact dimensions and after that to draw the model. The usage and the circumstances influence the choice of the material. The workshop had some different wood boards available. In the case of transporting the product on the airplane, the rough grain wood board needed to be replaced due to its heavy weight. There were two options on the table: basic thick cardboard and another material that has cardboard core with a thin layer of hard paper board on both sides.

I wanted the material for the prototype to be wood but the traveling made an issue of practicality when the final weight is considered. Together with Mr Frauenschuh and his trainee we reviewed the available options and they left me to decide. On the scale there were the options from wood, high density fibre board of 12 millimetres of thickness, and woodchip board of 19 millimetres of thickness. The fibre board would catch humidity very easily. The other options were thick cardboard with a thickness of 7 millimetres and the thick surface cardboard with two thickness options of 10 and 20 millimetres. According to Mr Frauenschuh even the thick cardboard can be strong enough with a supporting structure, although it requires a lot of it. However the material was ending from the workshop storage and a new order had not been made to the factory that was located one hundred kilometres away. The best and seemingly only material to use was the thick surface cardboard which is almost as light as cardboard but stronger. Unfortunately it is relatively costly but it allows the end product to be both light and hard.

Mr Michael Ebner was the second wood professional with whom I discussed the project. He listened to the idea description and asked questions and made remarks such as the final details, material property differences and the prize. He said that the number one thing I needed to consider was the users: the horse and the human and their requirements, limitations and features. Second matter is the

work itself, how is it done and what elements and skills does the equine professional need to work. He made very good points that I could well relate straight to the personal knowledge and skills that I have from massaging and working with horses. He asked have I thought about the price and told me it would be from 500 to 800 euros, depending on the exact details and material. According to him there is no professional who would make a piece like this for less money than that.

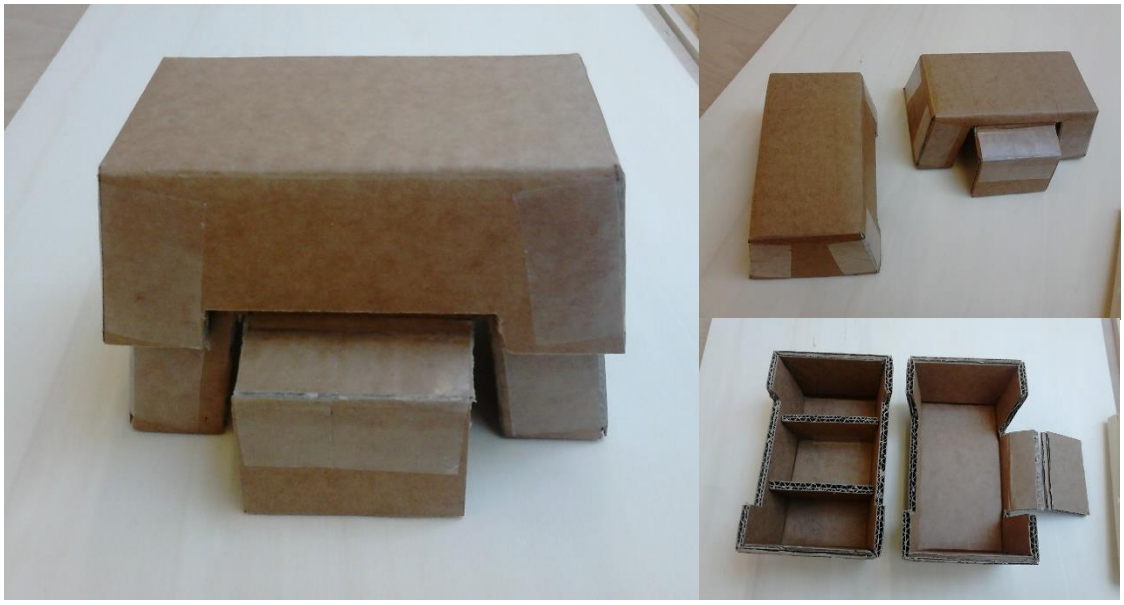
Ms Caroline Lindsay took part in the fourth design discussion. We had a long video discussion right on the first session and after the interview she gave me inspiration from products made for human sports training purposes which made me think about some earlier ideas about piling up the parts of the product. She told that safety for the horse is the fundamental feature on the side of the functionality of the product. In addition she said that she would like a wide area to stand on. The space for standing creates either tension or calmness depending on the size, which I can confirm from an empirical experience.



Picture 21. The idea to combine adjustability and strength.

3.6 The Fourth design discussion

Mr David Powers told that he likes the outlook of the newest box as well as the idea to pile them up as on picture 21. He seemed to be able to imagine himself already working on this box and said that he wants to have one. The stability and wideness are the features he especially appreciated. I made a cardboard model (picture 22.) based on this design and went to visit the stables close to the university. I met Ms Melanie Brant, a local veterinarian who seemed to like the idea even though she is not a physiotherapist herself, and the only task she would need an elevation is filing the teeth which she was not able to do due to a shoulder injury. She promised to contact other local veterinary physiotherapists.



Picture 22. A concrete draft that lasts some weight (the author).

Some private horse owners could provide additional opinions from their point of view. Private owners need an elevation most often when mounting on the horse and additionally for different small tasks. Ms Geraldine Chwoyka saw the small scale model I made and she summed up the wanted features I would expect from the group of users. First the material had to be the kind that would not break easily, such as plastic. She also confirmed to agree when I told her that I want to make my designs responsible and avoid plastic as much as I can. Although plastic can be ecological, it is not collected and recycled in all countries. Additional negative aspects are its basic features, among other things it is not possible to

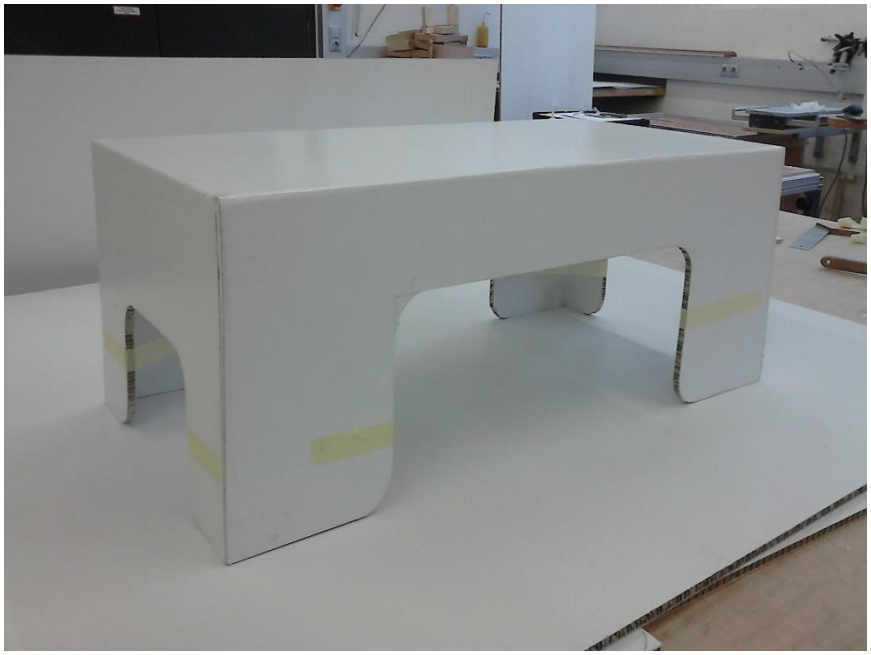
fix plastic products by oneself and the feel of it is not pleasant. Another requirement Ms Chwoyka came up with was relatively light weight of the object due to the fact that stable work is full of heavy lifting and carrying. As a base line she states that it should be something practical, fully in the sense of the usage.

The people who work with horses are straight forward and hard-working and they want things to function. Ms Chwoyka commented for the price that her expectations would be around 50 to 150 euro but perhaps even 200 – 250 if it´s “the product”, that is a perfectly functional platform. For the moment at the stables where she and her two young adult children have their four horses a wooden step is used on the side of the concrete ramp (pictures 15 and 23) that leads to the hay barn´s upper floor. The step has been bought close to the stables from a hardware store in Hallein. I followed the actions of the people on two days for several hours and the concrete ramp was used on 2/3 of mountings and the step for the last third. The place has about 60 horses which means that an elevation for mounting is used frequently.

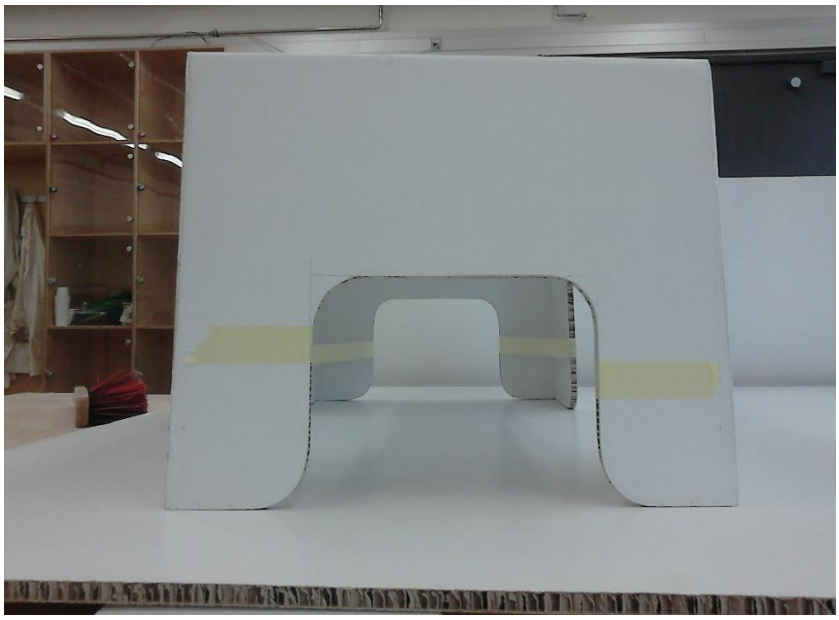
Picture 23. Mounting, Georgenberg stables, Austria (the author).

4 The resulting prototype

The prototype (pictures 23, 24 and 25) is made out of paper. The intention was to use wood due to its properties in terms of stability but however the prototype is made out of paper, to be accurate corrugated cardboard core with a thin surface of paper plated cardboard on both sides. The thickness of the material is 10 mm. The box is steady and the structure is strong enough for a human weight. Before the support structure had been made an engineering student commented that she suspects it can last but perhaps not in the middle due to the open wall combined with the long frame. However the base piece was stood on successfully. The opening step was omitted in this version of the model because the properties of the material make the use of screws impossible. The platform(s) seen on the pictures are the base box of 300 mm of height which is accompanied with the middle elevation of 200 mm of height. The last piece of 100 mm of height was left out from this prototype.



Picture 23. The phase of gluing has been done for the base piece (the author).



Picture 24. A side view of the drying base piece and the material (the author).

The first part of the work was to build the objects up as I reckoned on the drawings and the second part was to design the supporting structure to make sure that the platform takes the weight of a person. The reason is that I need to make my point on the thesis presentation. I decided to change the design of the feet a little in order to achieve the best possible robustness. Wood as a material for the object would have been the safe option to gain the confidence to stand on but as Mr Ebner mentioned until the design is finalised in all its details there is no need to make a finalised prototype. I completed the build-up process in phases in order to achieve the best compatibility in between the objects for the benefit of the us-ability. This defined that the base piece is finished, glued and dried properly and afterwards the middle elevation of 200 mm is made the same way.

The following phase contained repeating the same actions with different measures to make the 200 mm elevation. After that there was still a whole lot of work in creating the supporting structure to gain the needed stability to test the object. To my surprise my workshop support and prototype mentor Markus took the base piece and stood on it; and the structure could stand the weight! He did not stand on the middle but it is good to know that it is very strong where the structure touches the ground. “Paper is from wood too”, commented Markus. The support structure makes it possible to stand on in the middle. The aim is to follow

the design concept to have the objects on top of each other. I must say that working with this material was harder than with wood, because it did not work (or behave) as wood does. A few people who have helped me have been as confused as I have, because they know wood but not cardboard.

Picture 25. Both pieces piled up into a platform (the author).

4.1 Testing and feedback

I took the model to the horse stable right after the glue had completely dried to get it tested. The feedback received for this paper is solely from private horse owners. They would need the platform for several different small tasks while the musculoskeletal therapists would need it for one longer task: completing a muscular, osteopathic or chiropractic therapy. The day was a little cold and rainy but during the week there was no better option and hence I needed to get big plastic bags to protect the prototypes from water. Those plastic bags can be a nightmare for some horses whereas for some others it is a toy to play. First my helping crew and I went to the Georgenberg stables in Kuchl, Salzburg and with the support of one of my contacts Ms Rosemarie Wieschnitzky I got to talk to another two ladies.

The second two interested testers were found at the neighbouring stables called Dirninbauer (or Dirninger).

The first tester was Ms Gabriele Obermayr with her horse who is seven years old and 161 cm tall. Ms Obermayr is 174 cm tall. She tried with both the base piece and the combination of the base and the middle elevation and preferred the combination. She said that the platform was perfect, easy to handle, stable and was at the perfect height for her horse. She also liked the large area to stand on. Her horse was very accepting, curious and calm and he wanted to smell both the platform and the plastic cover. He showed no signs of being afraid. The second testers were Viktoria Tollinger and Paloudar, a 12 year-old gelding with a height of about 169 cm. Viktoria is about 172 cm tall. She seemed sceptical of the testing. Her only comment was that she was not sure if there is a good height for her horse, and the horse did not want to move to stand closer to the plastic and did not act comfortably when it was moved. However he got more curious when we gave him time. The platform did not make too big impression on this horse owner.

Picture 26. Gabriele Obermayr and her horse (Photo by Elena Koleva).

Picture 27. Viktoria Tollinger and her horse Paloudar (Photo by Elena Koleva).

My third tester was Ms Anita Bernegger with her youngster Ricoleto, who is a five year-old and 157 cm tall. Anita is 165 cm tall. She said that the idea is great. Her horse is not very tall and she thought the base piece alone is enough for her needs. We talked about the material for which she commented that recycling is a positive point. Anita presumed a wooden object would become too heavy to handle. She called for an additional side step that would ease stepping down from the platform and I told her it is on the design plan but not executed on the prototype. Ricoleto was completely fine with the new situation and the potentially frightening white box, and behaved trustfully and in a calm manner. The last testers were Ms Selina Scheichl and Diamond. Diamond is a five year old and 178 cm tall and Selina is 164 cm tall. Selina said the platform is great, very comfortable with a good height and large and wide enough to stand on. She added that it would be useful to have for the numerous things that it can be used in a horse stable and it is very easy to put on the side to stand on the front side. Her horse was not in the least fearful and accepted the platform next to him immediately.

Picture 28. Anita Bernegger and her horse Ricoleto (Photo by Elena Koleva).

Picture 29. Selina Scheichl and her horse Diamond (Photo by Elena Koleva).

4.2 Next steps

The whole process completed heretofore is the base work in making this product to become reality. Now that I have come across so much good feedback beforehand and afterwards from both private people and professionals who have seen the product, it has confirmed my beliefs about the future of this object as a wanted and needed product. I estimate that the resulting design will still change and perhaps the material too. The product will be improved until the needed tools, space or a company for production will be available, and an investor or other way of financing will make it possible to start production. I will look for a possibility to build another prototype out of wood to discover the real measurements and working methods that I have had on the shelf during the prototype building process.

I will keep improving the thesis and the presentation and share it for associations and people working with horses in animal health industry. Achieving awareness among the target users is another aim to reveal that the product in question is being developed and to receive further feedback. One question that needs supplementary research is how I should operate by the means of patents and an unpatented design. How to get a prototype into production and arranging the sales are examples of issues that do not belong into the framework of the thesis but they are essential questions for the product development. One more important matter is to keep the thesis contacts updated of the proceeding and to send them the thesis when it is finalized. Confidently my target is to be sending the finished products to the thesis contacts one day.

5 Conclusions

This product in question is needed and wanted. I base the statement on the so far faced professional interest. As a matter of fact it already has a small list of customers that are more or less serious about purchasing one for their practice. User-centered design is the best design experience I have had during my short designer career. The personal meaningfulness of the thesis topic combined with a group of users for and with whom I can work to develop an object that opened

my eyes into their world. Together we made a great tool, perhaps not design-wise but for its usability and functional properties it is at least a masterpiece.

I am satisfied that despite the long distance we could manage to have the design discussions. I would have wanted to have more of them with my contact persons. The best way would have been to meet in person although it can be that since the professionals are very busy they would have not had time for such meetings. It was great that I could add information from the discussions with professionals in other fields and this way fill up the text and widen my own understanding with a consignment of knowledge in different point of views. I found that talking about the project, presenting the idea to a new person is a great way to receive instant feedback and valuable comments. Some of those persons do not have any understanding or experience about horses but regardless of that I could see how those people view my idea and possibly add some realism and better ways to communicate and present my idea(s).

The number one matter on my mind about my learning throughout the project is how to choose what things are relevant for a certain kind of work. It is connected to my other improvement point which is customizing a certain topic to a certain group of listeners. Especially in presenting I did not know how to specialize my message to the listener and I am making progress in my development every day. According to the feedback of our course lecturer for presenting techniques, Gerhard Fenkar-Fröschl, I am a natural presenter and my ways of presenting and expressing are capturing and energetic. At the final phase of the writing the project has received more international interest via email and on social media and that gives me perfect chances to apply the mentioned learning.

One has to learn what is needed to develop, maintain and possess to get things done but also what is needed to maintain their own selves as emotional, mental and physical beings. I myself did not dedicate all my time abroad for work excluding the latest two months, but I definitely missed out on a lot of experiences because of work and responsibilities. What I am trying to say is that doing a thesis is an extreme situation, but during this process I have learnt what elements

should and should not be prioritized in daily life. Additionally I am very happy to have gone through this process in all its aspects.

I must say it has been an amazing journey. I am talking about the whole past six months. At the beginning I faced certain obstacles which delayed the concrete start of the process. Field work especially with people working with animals and health care, material search and orientation, a prototype to build up on the side: it all takes time. On the list I also had an internship and a couple of courses to do all in a foreign context with the thesis process. And I have succeeded. All I can say is now the degree is done. And learning has started.

5.1 Thank you

Thank you, for all of you who have been there for me on these years, you are the reasons I could not possibly leave out this thank you page. I dedicate my work to the caring, seeing, hearing and loving creatures in my life. You are the stars in my eyes.

Family Vuoristo: my mother and father Maikku and Jussi, little brother and sister Sami and Siru, and all the furry animals that we have grown up with; I will always love you. Then the ones I have chosen myself, in a reverse alphabetical order: Veera, Paola, Omotomilola, Mihir, Marlis, Markus, Malavika, Katrin, Johan (both of you!), Isaac, Elena, Arash, Anni, Andrew and Alexander. Here are just the ones that have specifically supported me during the studies or the thesis process, I still love all of you!

Jukka niskanen – for believing in me
Ulrike (hofman) Szigeti – for support on my Salzburg journey, encouraging and trust
Markus Frauenschuh – for being the sanity, supporting ideator and laughter during the whole prototype building process
Michael Ebner – for making me consider important concrete questions in product development process

Davide Tealdi – for reminding me life is precious, humour is self-evident and anything is amazing when it is done out of passion
Maximilian Pristovnik – for listening, taking me seriously and giving great presenting tips
Hararld Koneczny – for giving me views about design and work life
Martha Balerina – for being the endless support and the joy of our design school journey

Animal Therapy Media, Beth Lorraine & team – for being excited, offering help and being supportive
David Powers – for being a perfect kind of contact and doing everything I asked for
Laura Batten
Caroline Lindsay – for laughs and a wide range of point of views
Jemma Marsh
Claire Cole

Synowaytion, the team & Bernhard Rothbucher – for all your help and the lessons about design world and working life

Toyota Boshoku Europe office in Brussels, Belgium as in Sep 2014 to Jan 1015 – for a perfect first internship experience and introduction into work life by being kind, considering a young designer as an equal adult and giving some responsibility. Special thank you for Mr Caglar Hallemoglu, Mr Peter Ghyssaert and Mr Toyotaka Watanabe

Every time I see the sunshine
I find excitement and happiness
It´s like a guffaw of my horse
Calm, loving and always near

Now the time has come to return
All I ask is to remember
What ever made us feel like home
And never say goodbye

Vocabulary

Braid, to; A way to decorate long hair with picking a bundle of hairs on three or more groups and then turning them over and around until there is no more length of hair left. The end result, called plait is then tied up with a hair bobble, or rubber band with horses.

Croup (body part); The highest spot on the rear of the horse, equivalent to the withers in front.

Dock; The point on which the tail bifurcates on the buttock of the horse.

Dressage; The fundamental form of training and competing in horse sports. Is practiced on flat open riding court, although the training includes a variety of other activities. The advanced grades of dressage are sometimes called ´dancing with the horse´ due to the outlook of the intensive but inconspicuous communication resulting in harmonious movement and understanding between the rider and the horse.

Equestrian; A horse rider, a person skilled in horsemanship.

Equitation; The sport(s) practiced by equestrians, of which several variations exist and equitation refers to those that include the rider on the back of the horse.

Halter; The head collar used for paddock animals e.g. horses and llamas.

Haunches (body part); The hip and upper thigh of the horse.

Mane; Longer hair growing on the back or around the neck of some animals, such as horses and lions.

Massagist/ massage therapist; A term for massage therapist that doesn´t define the gender.

Masseur; A male massage therapist.

Masseuse; A female massage therapist.

Nape (body part); the back side of the neck

Palpation; The sense of touch, the method a therapist uses to understand the state of muscles and other elements in a body.

Peat; Organic matter appearing in nature in peatlands or swamps. High volume of carbon and water in nature, has to be dried before the common usage. Used in paddock animal inside space beddings and in larger grains as surface of outside running tracks.

Stall; the individual rooms in the stable that horses live in, each one has their own space.

Tumescence; The existing swelling to be felt on the body parts below the knees (in between feet tendons, skin and bones) that can be permanently increased due to an injury, or stress caused by training. An athlete who has had time for recovery should have ´dry´ feet, which means that excessive fluid can´t be felt by palpation before the training of the day. Afterwards it is normal to feel some fluid, which normally exits during few hours.

Withers (body part); A convex spot to measure animal´s height, located on top of the animal in between the nape (back of the neck) and the back.

Quarters (body part); A large round area at the rear of the horse better seen from a side view, equivalent to the shoulder blades in front.

References

Alanen, J. 2005. Lecture notes of the education. Tampere Sports Massage School, Tampere. Degree in equine massage therapy. (Secondary.)

American Veterinary Medical Association. 2016. Market Research Statistics - U.S. Veterinarians – 2015. https://www.avma.org/KB/Resources/Statistics/Pages/Market-research-statistics-US-veterinarians.aspx. Read 3.Apr.2016

Canadian Centre for Occupational Health and Safety. 2015. Working in a Standing Position: Basic Information. https://www.ccohs.ca/oshanswers/ergonomics/ standing/standing_basic.html. Read 20.Feb.2016.

Clarkson, H.M. 2013. Musculoskeletal Assessment: Joint motion and muscle testing. Philadelphia, USA: Lippincott Williams & Wilkins, a Wolters Kluwer Business.

Denoix, J-M. Pailloux, J-P. 2001. Physical therapy and massage for the horse: Biomechanics, exercise, treatment. Vermont, USA: Trafalgar Square Publishing, Manson Publishing Ltd.

Härkönen, A. 2012. Hevoshieronta valmennuksen apuna/ Use of massage in equine training. Häme University of Applied Sciences. Degree program in Rural Industries. Thesis. http://urn.fi/URN:NBN:fi:amk-201205158207. Read 28.Apr.2016

International Ergonomics Association IEA. 2015. Definition and Domains of Ergonomics. http://www.iea.cc/whats/index.html. Read 12.Apr.2016.

Macnab, M. 2012. Design by nature: Using universal forms and principles in design. Berkeley, USA: New Riders, an imprint of Peachpit, a division of Pearson Education.

Mikkonen, J. 2015. Miten kiropraktiikka eroaa mm. osteopatiasta, naprapatiasta ja OMT-fysioterapiasta?/ What are the differences between Chiropractics and i.a. Osteopathy, Naprapathy and OMT Physiotherapy? http://selkakuntoutus.fi/blogi/ miten-kiropraktiikka-eroaa-osteopatiasta-naprapatiasta-omt-fysioterapiasta/. Read 3.Apr.2016.

Panero, J. Zelnik, M. 1979. Human dimension & Interior space: A source book of design reference standards. New York, USA: Whitney library of design, an imprint of Neilsen Business Media, a division of the Nielsen Company.

Scott, M. Swenson, J-M. 2009. Benefits of Equine Massage Therapy: A Review of the Evidence and Current Practices. Journal of Equine Veterinary Science. Amsterdam: Elsevier Inc., Issue 9, 687 – 697.

Shaw, L. Strong, S. 2008. A client-centered framework for therapists in Ergonomics. Jakobs, K. (edit.). Ergonomics for therapists. Missouri, USA: Mosby Inc., an affiliate of Elsevier Inc, 17-26.

The Finnish Veterinary Association. 2015. The Veterinarians of Finland. http://www.sell.fi/ammattina_elainlaakari/. Read 3.Apr.2016.

Väyrynen S, Nevala N, Päivinen M. 2004. Ergonomia ja käytettävyys suunnittelussa/ Ergonomics and usability in design. Helsinki. Teknologiainfo Teknova.

Human references

Batten Laura, Veterinary Physiotherapist. VetPhysio-UK

Bernegger Anita, Horse owner. Dirninger stable, Kuchl

Chwoyka Geraldine, Horse owner. Georgenberg stable, Kuchl

Cole Claire, Equine & Human Sports Massage therapist. Equilibrium.

Ebner Michael, University lecturer, Head of Forest Products Technology & Timber Construction. Fachhochschule Salzburg.

Frauenschuh Markus, Head of the workshop. Fachhochschule Salzburg.

Koneczny Hararld, Transportation, Product and Graphic designer. Formworx.

Lindsay Caroline, Veteriary Physiotherapist. Perfect Movement Solutions.

Marsh Jemma, Veterinary Physiotherapist.

Obermayr Gabriele, Horse owner. Georgenberg stable, Kuchl

Powers David, Animal & Human Osteopath. InMotionEquine

Scheichl Selina, Horse owner. Dirninger stable, Kuchl

Tealdi Davide, Transportation and Product designer. Tealdi Design.

Tollinger Viktoria, Horse owner. Georgenberg stable, Kuchl

Wieschnitzky Rosemarie, Horse owner. Georgenberg stable, Kuchl

Pre interview questions

From: sarahelinavuoristo (at) outlook.com
To: contactexample@equinetherapy.com
Subject: Sara´s thesis project, Interview questions
Date: Wed, 10 Feb 2016 10:51:57

Hello my precious project contacts!

I hope you are all doing very well. I´d like to have an introduction discussion with all of you, but so far I have three contacts, and I am expecting to have more! I am looking forward to talk with all of you and I assume that you would like to know me a bit, and what made this idea to pop up on my mind! Here it is, we agreed on a following kind of approach with my degree leading teacher; here are my questions and afterwards I will let you know the full product idea that we will start to develop and improve together.

1. First I want you to tell me what kind of an equipment or object you currently use for the purpose of getting higher when you work with horses? Please, take a picture (one of the object alone and another while you stand on it next to a horse) and attach it for the message or send separately. Do you use something regularly, or various kind of things that can be found from the specific customer´s stable? (In this case you can look up some pic on the internet, or tell me where to find it.)

2. Second, how do you like this object/the objects you are using? Does it serve the purpose? Why did you choose to use it? Does it have some lacks, or features you would like to change? Do you feel secure and confident when you have to stand on that object?

3. Have you heard of an equipment/ tool that is designed for horse working people and is in use for the mentioned purpose? Do you feel that there is a need for such thing? Would you use it?

4. What do you require from tools that you use, and circumstances that need to be fulfilled when you are working? You can point out own ones or choose from these: good design, easy to clean, safety, specific material (which one?), easy to use, fitting for me, light to carry, durability, usability, relaxed atmosphere, horse tied from both sides, working with hands/ working with extra tools (as in massaging for example), ergonomic postures possible while working, cloves/ finger tape to protect the skin, et cetera.

Thank you in advance, and feel free to contact me to ask questions or have video calls. Thank you for your valuable time and the awesome willingness to help! Thank you for your support and have a very good Thursday.

Ps, you may take a week or two to answer these questions. I am waiting for more contacts and completing one last big writing task before the end of the month. Hopefully after that we have good chances to talk about the project with all of you.
Kind regards,
Sara Helinä Vuoristo
+358 504 919 XXX
sarahelinavuoristo (at) outlook.com

Contact web pages

Animal Therapy Media
http://www.animaltherapymedia.co.uk/

Laura Batten BSc (Hons), PGDip (Vet. Phys.), MNAVP
http://www.vetphysio-uk.com/meet-the-team.html

David Powers BSc (Hons), Ost PGDip Animal Manipulation
http://www.inmotionequine.com/team/

Caire Cole ITEC Dip. ESMA MCThA
http://www.equilibrium-massage.com/

Jemma Marsh BSc, PGDip (Vet. Phys)
http://jmvetphysio.co.uk/about/

Caroline Lindsay BSc (Hons), PGDip (Vet. Phys.)
http://www.perfectmovementsolutions.co.uk/about.html

More information on related fields

Goff, L.M. 2009. Manual Therapy for the Horse – A Contemporary Perspective. Journal of Equine Veterinary Science. Amsterdam: Elsevier Inc., Issue 11, 799 – 808.

Haussler, K.K. 2009. Review of Manual Therapy Techniques in Equine Practice. Journal of Equine Veterinary Science. Amsterdam: Elsevier Inc., Issue 12, 849 – 869.

Scuffham, A.M. Firth, E.C. Stevenson, M.A. Legg, S.J. 2010. Tasks considered by veterinarians to cause them musculoskeletal discomfort, and suggested solutions. New Zealand Veterinary Journal. Abingdon, United Kingdom: Taylor & Francis Group.

Thiger, E. Woxblom, L. Roos, A. 2015. Empathic Design for wood product Innovation based on genuine customer needs – A test application on Swedish Builders. Wood Material Science & Engineering. Abingdon, United Kingdom: Taylor & Francis Group.

Zeng, L. Proctor, R.W. Salvendy, G. 2010. Creativity in Ergonomic Design: A supplemental Value-Adding Ergonomics for Product and Service Development. Human Factors: The Journal of the Human Factors and Ergonomics Society. Indiana, USA: Human Factors and Ergonomics Society, Issue 4, 503 – 525.