

Webinar: Rider Biomechanics - A new way to learn about rider symmetry and dressage training

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A new way to learn about rider symmetry - the Equi-sens. Mary Wanless talks to its inventor Robert Feinberg.

0:01

[Mary Wanless] So welcome everybody to our webinar on the Equisens sensor kit which is done by myself, Mary Wanless, and its inventor Robbie Feinberg.

I've found it's a really useful tool both with myself, with my students at all levels, those using it on a static saddle and for some people riding.

And what you're seeing on the photograph here is the pad actually at this point is fixed on a static saddle. But we'll show you later [how it] actually fits into a pair of shorts that you wear over your riding breeches. So here's only one way of using it that you're seeing here. The more common way is with the pad incorporated into a pair of shorts or maybe I imagine you'd say pants that you wear over your breeches when you're riding.

So it's a fantastic kit [and] gives some amazingly counterintuitive answers sometimes to asymmetries that riders have struggled with for Centuries. But I'm going to hand you over to Robbie here, the inventor, to tell you how it all began.

1:06

[Robert Feinberg] Thanks Mary. My name is Robert Feinberg and among other things I've been a software engineer. I live in Southern California and I met Brigitte Huber, my partner, who is a thirty-year Bereiter from Switzerland. She relocated to Southern California about twenty years ago.

Brigitte was relaying a story to me about a lesson that she was taking with [Olympic medalist] Charlotte Bredahl. She was doing a half pass and Charlotte called her out as being crooked. Well Brigitte was really trying to be on her best behavior and do her very best and she checked in the mirror and lo and behold she was crooked even though she felt straight. So that really just brought the realization to how much your position can differ from reality. And at the time I had been playing around with some force sensors and some microprocessors and together we came up with the idea of actually measuring the force that a rider was placing against the saddle. So about two years and 30 prototypes later we came up with something that is close to the current design.

Now, in the photograph that you see there -- that's the sensor pad. Inside are about 50 plus force sensing areas. There's a microcontroller that's constantly measuring and comparing the collective forces on the left and right side and then indicating the information back to the rider by both lights and buzzers or vibrating motors which is similar to the vibration mode on your cell phone. The pad is connected by cable and you can see the gray cable coming out of the top of the pad there to a microcontroller that contains a rechargeable battery which gives you about eight hours of use. Now, the lights -- there's three different color lights on the controller...

3:47

[MW]

I'm going to change the picture.

3:58

[RF] Okay, so on the controller, there's a light and that's a super bright LED that shows red, green, and blue. When the red light is showing it means you're putting more force on the right side and when the light is showing green it's more force on the left hand side and when it's showing blue you're relatively balanced – you're very close.

4:30

[MW] What's the percentage difference between the two sides within the range that it shows blue?

4:37

[RF] It's very slight It's very slight. There's actually two different sensitivity settings which is controlled by the switch on the side of the unit but it's within a few percentage points of the amount of force. You're talking about a very slight window of being in balance.

We've also done versions where we've had an external cable so that you can show that light to a trainer or riding instructor who's on the ground and not just to the rider.

Now the system doesn't tell you what's right. It doesn't tell you what you're supposed to be doing or even where you're supposed to be. It's just telling you that you're putting more force on the left side of the saddle or the right side of the saddle.

So we've got the sensor pad and we've got the microcontroller and there's also a [pair of] Velcro shorts that slip-on over your regular riding breeches.

6:05

[MW] I'm going to change the photograph to show you that...

6:16

[RF] Okay, you should be able to see a photograph of the shorts with the controller tucked into a little pocket there. And the shorts are nice because they keep all the different components exactly where they should be, nice and secure.

The pad is especially critical that it be in the right place because if it's slipping around or if it gets folded over or what not then it's not going to give you the right reading.

6:44

[MW] You want to hit that bit, I'm going to say it's almost like you're wearing Pampers as they would say in America -- nappies as we would say in the UK. So it's there under your butt but you get used to that very soon in a way that doesn't bug you.

But you really do have to make sure that the midline of the pad is under the midline of your butt otherwise your reading's going to be awry and so getting the shorts absolutely right is critical and being [unintelligible] is really important before you start doing any measurements.

7:19

[RF] And it keeps the pad in the right position it keeps the controller at a convenient spot right along the thigh where it lessens the chance of injuring you in a fall and it keeps all the wires nice and tucked in where they're not going to get tangled in the whip or sort of be dangling or flopping where it might spook the horse.

Since we've had the unit out, we've gotten a lot of attention from some well-known people. [Olympic medalist] Hilda Gurney actually incorporated it into her presentation at the USDF conference in New Orleans.

8:06

[MW] So British listeners in the UK may not know Hilda Gurney is a well-known coach in the US and Grand Prix rider on the US team a lot. So you know an endorsement from her is really good news.

8:24

[RF] And then we've also given a unit to Hilary Clayton who is incorporating it into some of the research that she's been doing this past year.

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[MW] Yes, and many of you met Hilary Clayton, certainly if you're in the US. Hillary is originally from Scotland and relocated to the US and is head of the McPhail Institute at Michigan State University which does some fantastic research in horses, riders, lameness, how does the rider affect the horse, what [unintelligible] the rider is firing and, as I understand it, Bobby, she's been comparing results with the rider having the equipment on with Equisens and results you get with the Pliance pressure testing mat under the saddle so at the moment in her lab they're playing with what the difference between the pressure is on the top of the saddle and the pressures underneath the saddle and I think that research has not yet been written up or become part of Hillary's presentations but I'm sure it will at some point.

9:33

[RF] Now from what I understand, Mary, our experience is that a lot of riders tend to put the system on and jump on a horse and expect to be able to use it very quickly but that's where it differs with your experience.

9:53

[MW] Yes. So from my experience is that it really pays to do this on a static saddle before you start to use it on a horse and actually I'm going to sift through my photos here for a minute...

So this rider is someone I've coached before in North Carolina and when Bobby first gave me a system to play with she happened to be one of the folks I was staying with actually soon after that. And she uses the Panasonic iGallop as a trainer for her to help her just work on her skills off horse. So we played around with using the Equisens with her, on her Panasonic thing just with the saddle still.

And you can see here, she's sitting there looking at the blue light as she's got herself centered at that point in the middle. And having played around with the Equisens with a variety of riders always at this point we'll start on a static saddle. There's a huge amount of input for people to take in when they're riding and if you don't start with this I think it's just too hard for many people to begin to find where the middle is if they're actually riding. So playing with it on a static saddle has been great for a lot of riders.

I mean, I had Heather Blitz on it at one point and she tried it with not such clear pressure under her left side as under her right and had to fool around a little bit until she found where the middle was in a way that when she first took it riding she found really helpful.

And she's like one of the most elite riders in the world and I found it very interesting as a coach of getting riders when they're on it to kind of go -- do they get panicky and crazy? Or do they just play with it quietly and start experimenting with little bits? 'Cause often people get on it and then start leaning wildly here there in other directions and that doesn't work. That's a huge amount of overkill it takes something much more subtle you

[UNINT]

well what has to happen. And in fact one of my favorite exercises with riders when they get on this and they're not level, first of all, I can actually do with you here now.

If you're on a reasonably hard chair put your feet flat on the floor with your thighs at ninety-degrees your knees at ninety degree angle and just lift one foot and when you lift one foot, notice what happens to the seatbones and the thighs. So when the foot goes up, what do your seatbones do? You'll find that when you

[UNINT]

you end up with your weight going down on the other seatbone. Just changing the weight in one foot makes a huge difference to how the rider's butt is. Just lifting one foot to make a massive difference two feet on each seatbone now push

[UNINT]

down in but yeah so push down on one foot and see what happens to the seatbones there. I think you'll feel you

[UNINT]

goes up. So that to me means that the stronger stirrup happens in all

[UNINT]

the so if we get it one foot and lift your knee it will go down so one of the first corrections of somebody's struggling to find the middle is lift your foot and practice maybe just the thing you left the foot a little lift both legs a little on the saddle, off the saddle you

[UNINT]

they counter-intuitive is that you could have these heavy seatbones that put's a lot of weight down on a couple of places and on the other side look that less heavy seatbones that you might or have thought was the lighter side actually with less weight spread over more sensors is actually heavier. You get what I mean? So you might go I'm really heavy on my right side because I have a heavy right seat bone that must be the heavy side. But actually, if you sat on this, your left butt would be pressing down less hard on more sensors and actually end up heavier.

So what that means is there's an awful lot of playing around that you can do to figure out the contact area whether you know, the heavy seatbones, the sensors, whatever's happening there and what has to happen to get you more central and using this with a mirror in front of you and a mirror beside you is the ideal. In fact, I can't actually tell you the number of times people have said to me, "it must be broken!" totally convinced that it's broken and that they're sitting level when it doesn't register level.

So there's actually another little exercise that might be worth doing just to show you how wrong we can be on our perceptions of level just as happened with Bobby's partner Charlotte [Brigitte] with the beginning of all this. So why don't you sit fairly evenly, feet on the floor put your arms out at shoulder height. So your arms are level and parallel, your palms are facing towards the ground, your fingers are facing towards the ceiling and take your arms and raise one arm to 45-degrees and lower the other arm to 45-degrees what me you perhaps what of it

[UNINT]

To sit there like that for a minute you know hopefully no one's watching so they think you're a complete idiot but you are not the only compete idiot and we and

[UNINT]

in a moment, but not yet, I'm going to get you to keep your eyes closed and bring your arms back to shoulder height. So lets get you to do that now. So with your eyes closed, bring your arms back to shoulder height and now open your eyes. And you will most certainly find that your arms are not level

[UNINT]

you have never done it before

[UNINT]

but haven't heard before and my arm's aren't level and I hope you're doing that the first time then you're realizing that it's pretty scary any all that hoping that your arms at different height could distort your

sense of what level is. And if your arms did come back level, be worried because it's actually perfectly normal for your arms to not be level at that point. And if they are level, the chances are that you adjusted them to level before you ever really realized you were adjusting them to level and but you can teach yourself into getting level rather than really actually doing it.

So given that your arms can be not level after a minute of holding them like that, just think of the ramifications of that. I mean, what does that mean in terms of how level your body may be or not be when you would swear blind that it's level? The ramifications of that are really scary and I will never forget a lesson with somebody actually here where I am right now in California and her spine was really curving off to the right and I said to her well, does your spine go straight up or does it veer off to one side? And she said straight up. And I know when I'm beaten so I dropped the subject for a while and then I said to her here have another a little bit. Straight up or does it veer off to the side? up So I left it again and a while later I said does your spine veer off

[UNINT]

and then I said well look down at the horse's mane and tell me is your chin over his mane or is it to the right or is it to the left? help it then I in what it the have

[UNINT]

20:05

[Peter D.] Mary you may have to repeat that bit because you broke up very badly for about 15 seconds

20:13

[MW]

[UNINT]

what it can do that let's say directly over the horse's mane She thought she was leaning way off to the left. So getting vertical getting yourself where your body is doing what you actually think it's doing is a really big deal and one of the central challenges and applied well for most folks what their body is doing and what they think they're doing are two very different things and one of the challenges of learning is really getting what me and you could a bit to match your body as it actually is and here is one of the really good tools that having that happen.

Okay so I hope I've gathered from Peter here that I've been breaking up a bit, I hope that it's now clear that you're hearing me okay. So what I'm going to do is show you some of our other photos here. So I'm just going to go quiet a minute while I go to my photos...

So this is a photo of Charlotte [Brigitte], Bobby's partner wearing the pants so these have the pads that you saw right at the beginning set onto a saddle within them under the surface that you see. Here's the controller here tucked on to her thigh in a very unobtrusive way so basically these fit over your breeches and they even have a nice little non-slip seat to add to your

[UNINT]

So here we have the pad on somebody as they're riding so you can see how snug and neat they are and let's just come back to one of the other photos...

Now when somebody does start to ride in these it really pays to go slowly and to spend a long time in walk.

And of course we still don't really know what right is. The jury's still out whether if you're walking they should really be on blue or whether they should be going green-red, green-red, green-red which basically means left-right, left-right, left-right, Most people when they first get on a horse will just get green, green, green, green, green, which means left, left, left, left, left or maybe right, right, right, right, right and you know we still really don't know exactly what right is. And my hunch is that they should be

on blue most of the time and that the closer the rider gets herself to being really centrally organized over the midline the more blue they see

[UNINT]

so that the rider weights the inside seatbones in the turns or shouldn't they? And again I don't really know the answer to that. My sense is that if everything is really good, they're going to stay blue but we still don't totally know.

So what I'm going to do now is change the photo again and in fact to show you some of the thing's of the anatomy of what it is you're sitting on and how that can help you figure things out.

So, some of you have seen my pelvis photos before and what I want to point out on this photo is we're seeing the pelvis from the back here's the sacrum, here's the rider's coccyx, her tail bone, here are the seatbones, here are the rami which are like a pair of sled runners they're like the runners on a sled or the rockers on a rocking chair except that they go in and out towards each other. Here's the seatbone and here's the hip socket and underneath here is the knobble on the inside of the thigh bone and this surface here between this seatbone and this knobble is really critical I think to what that measures on the Equisens. And what we're going to do is get us an anatomy diagram so I can show you some of the muscles here. Okay.

Hopefully I've got you all again and you can hear me clearly. So what we're really interested here is this muscle here so in this diagram you can see the tailbone and it's angled so that you can see the pubic bone. Here's the pubic bone at the front. Here's the rami and the seatbones my mouse pointer here is on the right seatbone. And you can see this lovely muscle goes across between the seatbones and actually that bony knobble that you can see on the bone here but you can't see on the bone here because the muscle's covering it. So you've got this muscle called Quadratus Femoris going through between the seatbone and the underside knobble at the top of your thigh. This knobble you can actually feel very clearly on your side of your pantyline so on the line where your thigh becomes your pelvis you should be able to feel this knobble. This knobble you're unlikely to feel now.

So I didn't mean to change the picture there I'm not quite sure what I did but here we go so here's the muscle that's a huge part of your seating that is covering a fair number of the sensors on the piece of Equisens kit. I'm going to change my photo again so I'll go quiet for a minute...

This is a rather nice one where you're seeing the muscle going across again. Here you can actually see the bony knobble here and we're looking at this kind of distance under here which is a huge significant part of your sitting...

This photo's rather wonderful because on the left you can see the superficial muscles and this is the big glut muscle coming down over here this is the muscle that you feel on the outside of your bum, these are your hamstrings coming up to your seatbones so they're coming up filling in this gap here and if we cut away this big muscle you feel these little muscles underneath. With the bottom one here as a really big significant part of the seating surface.

So I think we should do a little exercise just to show you about this and give you some stuff that you can do to help get yourself more level and organized even though you don't have one of the Equisens pieces yourself.

And if you sit on your chair with your seatbones pointing down so you start off getting your thighs and seatbone pointing down and hopefully you can feel the seatbones and you want but if you had little flashlights on your seatbones they would point down and you want your thighs horizontal, your calves vertical so a ninety degree angle thing you're going. And do this a minute. Grab the sides of your butt and kind of pull your seatbones apart.

What happens then is nothing to the outside of your seatbones is down on the chair and your seatbones probably get very prominent and some of your butt crack between your seatbones in your private parts are closer to the chair than they might otherwise be. And then what you're going to do is take hold of your butt at it's side. And see if you can get one side of your pelvis and just tuck it in underneath in a way it's going to make your thighs go a little bit more outwards and maybe feel like it's a little bit rotated out. And then once you've done that, do the other side. And if you've managed to follow my instructions here you're going to feel that your seatbones are less bony and prominent and that you're sitting on a flat part of muscle to the right of your the old

[UNINT]

you're actually sitting on this muscle here where I'm moving the mouse pointer on the diagram. Right?

So you're sitting on that muscle on each side. Now sitting like this doesn't come naturally to most women and I could tell you going back some time and I had teacher who always used to say to me, spread your seat out so I heard him say that and guess what I did? I pretty much grabbed the flesh on the side of my butt.

So why don't you do that again? Pull the flesh off out to the side make your thighs parallel, gives you some bony little seatbones that just point down and at that point you would have, you know, just a bony surface pressing down on a very few of the sensors if you were sitting on the Equisens.

Okay, so let's make the change we did before and go tucking under the the right Get your thighs to go outwards a little bit they're gonna feel a bit rotated out and you're now sitting with your seatbones less clear to you between your seatbones.

I'm sorry, this is a little bit personal between your seatbones you just have your butt crack which won't be spread apart at this time your seatbones are going to feel much closer together and you've got that sitting surface on each thigh and you may even be able to feel this knobble here down on the chair where my mouse pointer is. As well as this knobble here and the seatbones are less clear to you than in the version we just did.

Okay, so here's the really interesting bit. Get one side of your butt and pull it out to the side so grab hold of your jeans or whatever and one side of your butt and pull it out. to the side So now on that side you're sitting on your bony little seatbones while on the other side you're sitting on a much wider pad that lies where this muscle is here between the seatbones and the bony knobble here.

And this may or may not feel familiar to you in fact of how you organize your butt right now So take that side that you just pulled out to the side and tuck it back under again. And now that you've tucked it back under sit there feeling both sides. And now take the side the opposite side of the side you just did and pull that out to the side.

Now my hunch is that this might make you feel somewhat peculiar because you probably instinctively chose to get the thigh that doesn't tuck in so well and pull that out first time around and that sitting like this now probably is less familiar to you than the first way. But most riders sit a bit like either this version or the version you just did where one seatbone would be a bony pressure point and on the other side they have a wider pad it the what at

[UNINT]

it but it then would register more pressure Right? Because your weight is over more sensors whereas the bony seatbone side puts a lot of weight on fewer sensors. So if you tuck in from the other side again then we're going to be in a more symmetrical place.

Okay, so I just changed my picture actually and what I'll be breaking up...

I'm sorry, I forgot to stop talking when I change my picture and that's a picture of me wearing the Equisens and I put the little lights under the shorts on my thigh there where it's actually quite easy to catch them in the corner of your eye.

And I've just seen that there's a note from our host, Peter, here goes ooo -- that feels weird, so it was obviously true for him that the pullout from the side on the side that his body would do that less easily is him it really asymmetrical feeling.

So, the person I've had ride on the Equisens here is the most skilled, is Heather As I said earlier when she first sat on it on a static saddle she had quite an epiphany about her left seatbone not being organized enough and how she has to rearrange her left side.

And she rode on it on one horse that she hasn't been training for very long and the horse has been very asymmetrical and it was very interesting because the other factor in this is not just the pressure that your body is putting down on the saddle but the pressure that the horse and the horse's back is upwards and this is a horse with a very uneven back it had basically a really bare muscle under the right panel of the saddle and very little long back muscle under the left hand under the saddle and basically whatever we did we couldn't really get Heather even because she was sitting on a surface that was not even.

And awhile later she rode in this on the young stallion Ripline, who is one of the up-and-coming rising stars. And found that she could find blue really well on him and that she could ride pretty much in blue but everything she was doing just on simple work so it means that this is not a simple matter it's not just as easy as oh, I have more weight on one seatbone less weight on another seatbone and just rearranging my seatbones will make the difference because what you do with the seatbones in the flesh is the deal and how even the horse's long back muscles are is a deal and that's why I think that the static saddle is a really great place to start because it takes away a whole load of the variables.

So Robbie, I'm wondering if you got anything else you would like to add?

37:41

[RF] No, I think you've covered it really well. You know it appears that it's not such a simple, straightforward thing, but by giving you the tools by which to measure what's going on you can get better insight into some of the things that are happening.

38:07

[MW] Yes, absolutely and the static saddle work with this is invaluable. I mean it just is a tool for a thoughtful coach working with a load of people to help those people and myself find where neutral is and so it sounds like it's much more complicated than you thought it was when you first designed it.

[RF] Absolutely.

[MW] Yeah.

[RF] Absolutely.

[MW] Yeah it is from the pressure coming down from the top and the pressure coming up from the bottom horse and a rider are inevitably quite a complex system. But despite that there's huge value in this.

So Peter, I wonder if we should throw this open to people's questions here. Yes, they just put up the website for equi-sens.com, thank you for that. Is there any other questions from anybody out there?

39:00

[PD] How long on average does it take for a person to start getting the light to be blue in your experience?

39:07

[MW] That's a great question. You know, some people just get

[UNINT]

that you blue and some people get up there and it takes them twenty-minutes or maybe even longer to find where blue is. That's on a static saddle. So there's an immense variation between the people who do just get up there and find blue and at times it's taken us more than twenty minutes and maybe close to half an hour for somebody to find blue but you know that's the person who actually learns the most from it.

[UNINT]

As soon as somebody's on the Equisens figuring out with the help of the feedback that the lights and mirrors and the coach as soon as the person is figuring out how they have to be that is a huge increase in their body awareness and it's automatic. I think that people's body awareness a new wave of feeling and figuring it out come out of this. So I don't feel like it's a body awareness it's just a body awareness developing tool.

In the UK, cap I think, that's lucky but UK I have one so I'm not sure there are any others in the UK but I have one which folks can certainly use when they come to Overdale.

How does the rider make lasting change? In the same way you always make lasting change. By finding a difference that makes a difference and really trying to practice, got it, lost it, got it, lost it, got it, lost it and of course if you're using the Equisens you've got lights that help you go got it, lost it, got it, lost it, got it, lost it, If you use it on a static saddle but then you're riding your going can I take the same feeling I had to have in my body of maybe just me but more tucked under or feel like my midline's facing a certain direction. You're taking those pictures onto the horse. And to me that would be very similar to a lot of the learning that I think folks can get from doing the dismounted exercises that we do even the little ones that we do in this webinar and then potentially take them onto the horse, but you do have to realize any lasting change probably takes a lot of got it, lost it, got it, lost it, got it, lost it and can you get it more and lose it less. And at some point down the line it just becomes the part who you are and what you do.

42:05

[PD] I suspect this device will help a lot when doing lateral work or even going on to circles in turn.

[MW] Yes.

[PD] How you're leaning one way or another.

[MW] Absolutely. So when you start going laterally then when you can get this working then you're doing really well because nine people out of ten when they go laterally get pretty well off kilter and , you know, working with this it pays them to figure it out going large, figure it out on a circle, figure it out doing something more difficult. So do we have any more questions from anybody? Are saddle fitters working with the tool to understand the

[UNINT]

43:00

[RF] I am not sure how to answer that because the unit is really incorporated to the rider and not the saddle. Our original design was to try and create a saddle pad that would sort of be more or less

universal but it's difficult in getting it to stay in the right place without modifying the saddle or you know otherwise destroying the saddle so we really focused on the rider from that perspective.

43:31

[MW] You know I think that really good research is going to come out of Hillary Clayton's lab and that she's best equipped to do really quality research than saddle fitters. So I think that's where

[UNINT]

come from it but help understanding of you know weights and pressures and what the rider really needs to be doing on circles and turns let's say take that forward more than anybody else and although I hope that with my association with some of these riders that I can help to take that forward somewhat as well.

44:25

[RF] We've got a question Do they work alongside thermal imaging pads under saddles. Thermal imaging.

44:34

[MW] Yeah I mean I've seen some thermal imaging done to assess saddle fit and I don't know that anybody's teamed this up with that and I don't know that that would work but at this point in time you know you're really getting into somebody who's got really good research possibilities and Hilary will be the person but it would be interesting to correlate the pressure on the top of the saddle with what you'd see under the saddle from thermal imaging. So, it's probably better done with the Pliance pad as Hilary is trying to do at the moment at her lab.

Another question is, do you see any difference in the way the horse goes also I reflect with what's seen on the horse? Well, undoubtedly if the horse has a back muscle that is more there pushing up against the panel of the saddle on one side and a long back muscle that is not there and not pushing up against the saddle with the same amount of push or the same amount of lift on the other side you're going to see a difference just as I said with that time that Heather Blitz rode a very green disorganized horse in the pad and basically what she would have done to have had to make it level was lean off hugely to the side because the surface she was on was so unlevel so you're going to get way more helpful readings on this on a well-trained horse that has a very even two sides to its back .

I think that the difference is in the side-to-side organization of the horse are probably going to be more significant than the back to front organization as in is it reaching into the rein, is it hollow. Then obviously, if it's reaching into the rein it's hopefully pressing it's back evenly up against the underside of the saddle and registering evenly against the pad if it's hollow it's more likely to be more hollow on one side than the other.

46:43

[PD] For those people on the webinar that aren't familiar with your work, Mary, is there a way that they can easily tell that you know the horse is pushing on either side evenly know they've got a horse's perhaps some more bowed to the one side or something.

46:59

[MW] So you could just ask yourself the question if you were sitting on an oil drum, not a horse, if you were sitting on an oil drum you would have an even shape under your right butt, right seatbone, right thigh, but that's to say under the left seatbone, left butt, left thigh. That's the ideal on a horse that if you actually are riding your horse and you ask yourself that question you might find that your horse is not like the oil drum that it will be giving you a wider more bare surface under one seatbone one butt cheek and one thigh than it did under the other seatbone the other butt cheek and the other thigh. It takes a little bit to learn to fix that and I'm not sure that if you're on your own, you're likely to be able to do that and there is good information in the clinics

[UNINT]

my clinic book on how to do that But skilled riders get to be able to manufacture an even surface on each side of them but most horses don't offer that They're not like the even symmetrical oil drum they're like anasymmetrical oil drum.

Your question about is this the best for experienced riders or novices I wondering if you can eliminate problems by starting with riders early in their careers and yes I think you really can I mean the other tool that I have at home is a riding simulator and our riding simulator courses are attended by riders at all levels from really quite novice to really quite experienced competitive riders and everybody learns to get their body more even and organized and it will be exactly the same with this so you can get a rider to figure out where the middle is and get to give to notice off-horse things that could help to build strengthen in their weak places it would take a novice rider much longer to take this into their riding and find the fixes than it would take an experienced rider to it take it into their riding and find the fixes that level of experience would give an easier transference but I'm all for getting novice riders as right as we can as early as we can I mean for all of us, why practice get your self closer at least to practicing doing it right.

So I think I'm going to say a big thank you to Bobby for being here and actually for what he's done because my only invention is the rider's belt which actually you can see hanging over this rail here in my friend's office actually and inventing that took forever and was quite a drama and that's nothing compared to what it would have taken to invent this.

And I remember a friend of mine who is another inventor who actually gave up on her product in the end saying that she listened to a radio show where eventually the presenter said if you have a good idea for something novel that you think will be absolutely great and you wake up in the middle of the night with that good idea roll over go back to sleep and don't do it! And this man didn't roll over and go back to sleep -- he did it so a big thank you for all the time, brain cells, energy, and no doubt money that you have poured into this and may it reward you handsomely as well as all of us that.

50:47

[RF] Thank you very much for bringing awareness of this to your audience and thanks to all the participants for all the questions.

50:58

[MW] Yes, question's that hopefully we'll be able to answer more of as time goes on so thanks to all of you and goodbye. [RF] Bye bye.