

FEEDING THE PERFORMANCE OTT

BY DR. NERIDA MCGILCHRIST



INTRODUCTION

OTTs are unbelievably willing and athletic creatures, who are capable of performing at the very highest levels in almost any equine discipline!

While their natural abilities take them a long way, OTTs will always perform at their best when their nutrition is absolutely spot on. Excellent nutrition keeps them physically and mentally healthy and fuels them toward peak performance.

In this eBook, I want to take you beyond the basics of nutrition and dig deeper into the science of performance horse nutrition.

We will look at your OTT's dual energy system and how to fuel them to maximise performance capacity and stave off muscle fatigue and poor performance.

PLUS we will cover feeding before competition, so that what you feed supports rather than hinders performance.

And finish with what to feed after competition so your OTT recovers quickly and is ready to go again when you need them!

Are you ready? Let's go!



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FEEDING THE PERFORMANCE OTT

BEYOND THE BASICS

There is a lot to feeding a successful performance OTT. And we have covered the basics for you in the videos and eBooks 1 through 13 in the Queensland OTT Nutrition Series. To do the best possible job of feeding your performance OTT, I'd love you to specifically review:

Video 1 – Knowing Your Horse Inside Out, Video 3 – OTT Nutrition Into the Future, Video 8 – Managing Gastric Ulcers in Your OTT, Video 10 – Feeding for Calm Behaviour and Video 12 – Hindgut Health in Your OTT.

These videos will give you a solid foundation for the basics of feeding a performance OTT... And it is the basics of nutrition – things like always feeding a balanced diet, feeding lucerne hay before you ride to prevent squamous ulceration and keeping the hindgut microbes in pristine condition – that will get you 90% toward your OTT's best performances.

Before we move on, let this be your reminder to **never overlook the basics!**



DUAL FUEL TANKS

Given your OTT doesn't have a dashboard with handy little icons and lights to alert you to their internal features, it is often an unknown fact that **performance horses operate on a dual fuel system.**

Fuel tank #1 – The hindgut

The first, and I would argue, most important fuel system is the slow burning aerobic system, which requires oxygen to operate and burns fatty acids derived from oils and fibres. The fuel tank for this system is predominantly the hindgut.

In the hindgut, your horse's microbes take fibre and digest it, via a process of fermentation, into compounds called volatile fatty acids or VFAs for short. Your horse absorbs these VFAs from the hindgut and uses them to fuel their muscles.

Here is the cool thing about this fuel system... as long as there is fibre in the hindgut, and your horse's hindgut microbes are healthy, **this VFA fuel is flowing constantly into your horse's body.** Making a healthy hindgut like a rechargeable, but always fully charged battery... constantly feeding energy into your horse's muscles.

When operating on this system, your horse can go for hours! There are no waste products that accumulate and provided a horse is fit, fatigue takes a long time to kick in.

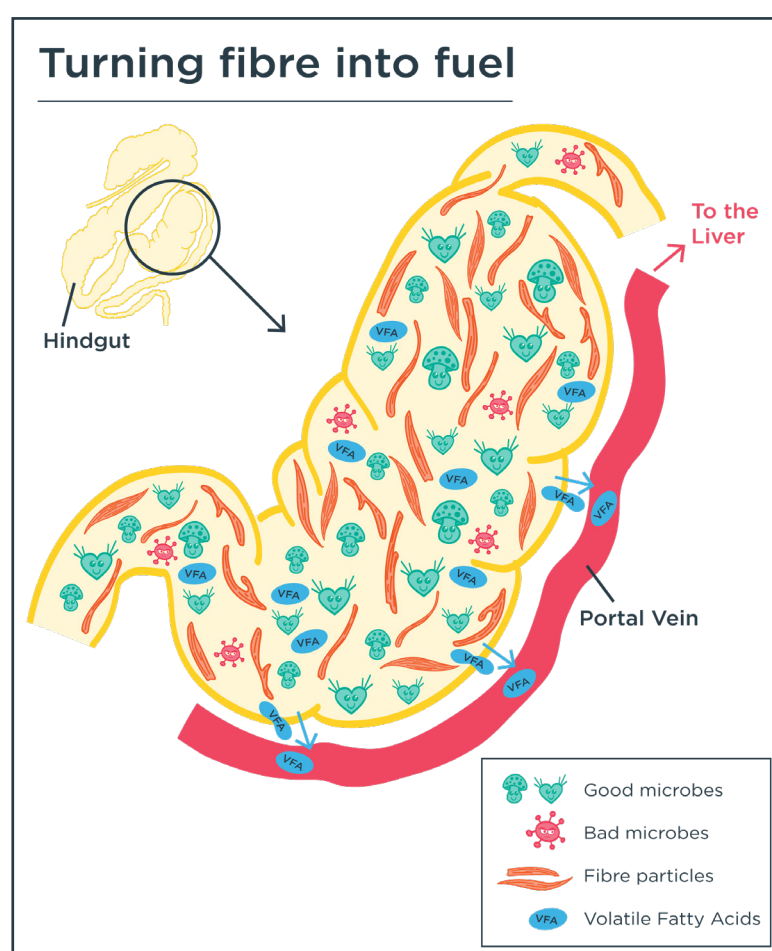
The catch, with this fuel system, is that **it needs oxygen to operate.** So it is BRILLIANT when your horse is travelling or doing slower work warming up and even in the moderate to high intensity phases of competition. BUT as soon as exercise kicks into really high intensities, for example sprinting or jumping, your horse needs to switch to its second fuel tank, the muscles.

Fuel tank #2 – The muscles

Your horse's muscles store a compound called glycogen, which is just a whole lot of glucose molecules bundled up and stored together. When doing any very intense work that outstrips your horse's ability to get oxygen to their muscles, your horse switches to burning glycogen for fuel.

Glycogen is the **only fuel your horse's muscles can burn under the zero oxygen, anaerobic conditions!** The downside to this fuel system is that **when glycogen is burned without oxygen present, it creates lactic acid.**

When lactic acid gets to a certain concentration in the muscles, the muscles become acidic. And **once a certain acidity threshold is reached, this glycogen burning, energy generating system shuts down and your horse will hit fatigue.**



A healthy hindgut with mostly good bacteria plus plenty of fibre will produce VFAs at a rate the horse can absorb. This is ideal!

DUAL FUEL TANKS (CONT..)

Plus, the muscle glycogen fuel tank is not being constantly replenished. Meaning when your horse starts a competition, the muscle glycogen they have on board is essentially all the muscle glycogen they will have access to for that particular competition. **If your horse uses it all up, it's gone, and your horse will fatigue.**

So, unlike the always-fully-charged battery that is available with a healthy hindgut fuel tank, the muscle fuel tank gets filled up during rest and then depleted during work.

The hindgut and muscles work together

When your OTT has a healthy hindgut that is full of fibre **and** LOTS of beneficial fibre fermenting microbes, it is pumping out masses of energy in the form of VFAs for your horse.

And, when your horse's diet is optimised for muscle glycogen storage, their muscles should also be brimming full of glycogen.

When these two systems are beautifully in sync, your OTT will rely almost solely on the slower, aerobic, VFA burning system to fuel exercise for as long as oxygen is present. And they will only dip into their glycogen supplies when absolutely essential! Meaning your horse will conserve glycogen levels **and** keep muscle lactic acid to a minimum.

Both of these factors combine to mean your horse will have capacity to work for a long time and be capable of very high intensity work, **without** muscle fatigue kicking in!

When the system breaks

Like most beautifully designed systems however, there is always a way to break it!

The most common way to break the system is to **feed too much grain and not enough forage**. This reduces the VFA fuel coming from the hindgut and forces your horse to rely on its muscle glycogen system.

Glycogen **can be** burned with oxygen present and is an incredibly efficient fuel to burn when there is oxygen available. So if you feed a high grain, low forage diet that reduces the amount of VFA coming from the hindgut, your horse will start to use glycogen to make up the energy deficit, even during travel or slow exercise.

This works well, EXCEPT, the horse is now burning its glycogen supplies up and once the glycogen is gone, the horse is going to hit fatigue.

And **fatigue happens really quickly when they dip into their glycogen supplies too early.**

FEEDING TO OPTIMISE THE FUEL TANKS

While your horse's different fuel systems really are high tech... feeding to optimise them is not!

Here are the two rules for feeding to maximise both hindgut VFA energy and muscle glycogen energy:

Rule #1 – Feed lots of forage

All horse diets should be based on forage and even the highest-level performance horses are no exception.

Keeping lots of forage in the diet keeps the hindgut full of fibre and allows the good microbes to continuously make the **oh so valuable VFAs** that keep your horse's muscles constantly fuelled up. Which then allows them to save their muscle glycogen for when they really need it!

FEEDING TO OPTIMISE THE FUEL TANKS (CONT..)

Aim to feed at least 2% of your horse's bodyweight in forage.

This means for an average 500 kg OTT, you should ideally aim to feed 10 kg or more in forage per day! Or, provide constant access to ample pasture.

Rule #2 – Feed controlled amounts of digestible grain

The fastest way to build muscle glycogen levels in OTTs in serious work is to feed grain or grain-based feeds. Cereal grain contains starch. And like glycogen, starch is just glucose molecules joined together.

When you feed well-cooked grains, the starch gets broken down to glucose, during digestion in the small intestine. The glucose is absorbed and the muscles literally just put the glucose molecules back together and store it as glycogen.

The best grains or grain-based feeds for building muscle glycogen are **boiled or extruded grains**, because they are most digestible in the small intestine and **provide your horse with the richest source of glucose for glycogen building!**

You need to be careful however to not overfeed grain and never feed uncooked grain!

Too much grain or any amount of **uncooked grain** will lead to **starch overflow into the hindgut**. Here the starch feeds the bad bacteria and they will shut down or kill off the good, fibre fermenting, VFA producing microbes... which will reduce the constant, fibre derived flow of VFA fuel from the hindgut in the process.

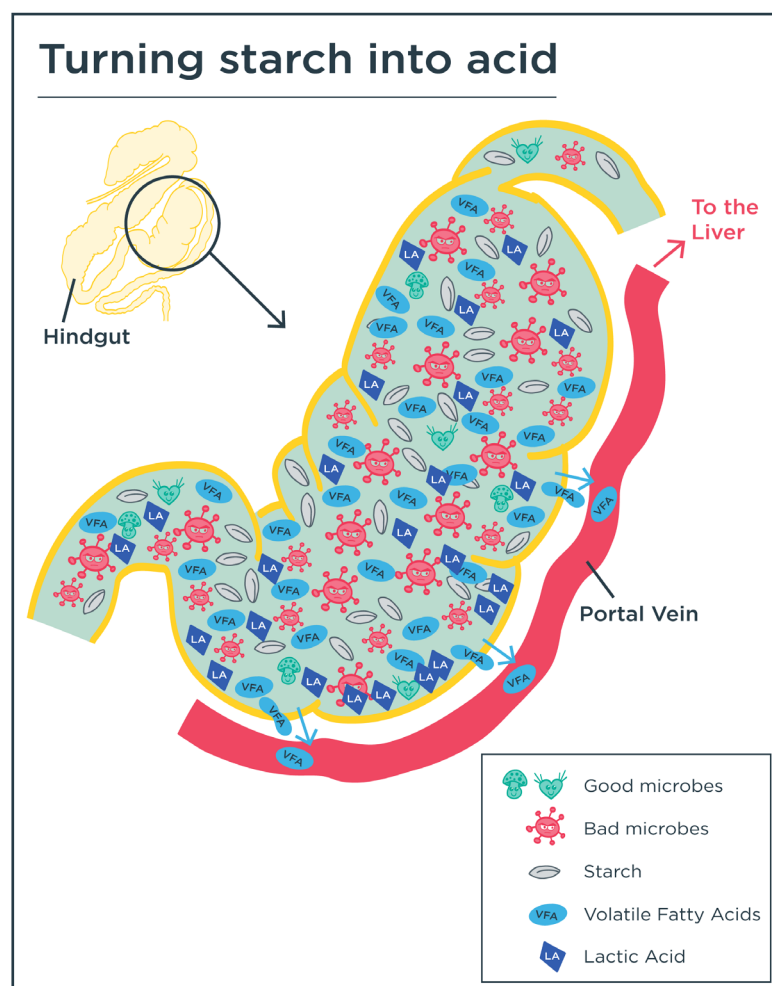
Any time we reduce VFA flow from the hindgut, we force your OTT to rely on their muscle glycogen for fuel. And this **puts them at risk of running out of glycogen and fatiguing early**.

So, some highly digestible grain is invaluable... too much is damaging!

Keep grains and grain-based feeds to around 0.5 kg/100 kg of bodyweight, which is 2.5 kg/day for a 500 kg OTT, with a **hard rule to never exceed 1 kg/100 kg BW**, or 5 kg/day for a 500 kg OTT.

And remember that whatever diet you feed, it must be balanced and meet all of your OTT's vitamin and mineral requirements!

What follows are some balanced diets that you can use as a starting point for your performance OTT when they are in hard work.



An unhealthy hindgut with an overgrowth of bad bacteria plus lots of starch, will produce VFAs at a rate faster than the horse can absorb AND also produces a lot of lactic acid. This creates an acidic hindgut and kills off the good bacteria.

FEEDING TO OPTIMISE THE FUEL TANKS (CONT..)

Example Balanced Diets

The diets below are example diets for a 500 kg OTT in hard work (using products from Queensland Off-The-Track partners):

For horses who are **holding their weight and muscle on a forage only diet**, all you need to do is add a balancer pellet or a vitamin & mineral supplement to top up the nutrients that are missing from the forage. And I like to add a little bit of flaxseed oil to keep their coats shiny and healthy!

Balanced Diet Option 1 – Balancer Pellet Only

1 kg/day	Balancer pellet (Pryde's 'Premium 250')
120 ml/day	Flaxseed oil
500 g/day	Lucerne chaff
2 kg/day	Lucerne hay
24/7 Access	Pasture and/or multiple types of grassy hay
Free Choice	Salt

OR you can use a complete feed at the correct feeding rate for your horse.

Balanced Diet Option 3 – Complete Feed

1.5 to 3 kg/day	Complete feed (Pryde's EasiSport or Easi-Off-The-Track or EasiGoing)
120 ml/day	Flaxseed oil
500 g/day	Lucerne chaff
2 kg/day	Lucerne hay
24/7 Access	Pasture and/or multiple types of grassy hay
Free Choice	Salt

For horses who need more than forage and a balancer pellet to hold their weight and muscle, you can add your own higher energy and protein ingredients.

Balanced Diet Option 2 – Balancer + Fibres + Grains

1 kg/day	Balancer pellet (Pryde's 'Premium 250')
0 to 4 kg/day	Any combination of higher energy/protein ingredients (see the list below for some of my favourites)
120 ml/day	Flaxseed oil
500 g/day	Lucerne chaff
2 kg/day	Lucerne hay
24/7 Access	Pasture and/or multiple types of grassy hay
Free Choice	Salt

Some of my favourite higher energy/protein ingredients are:

- Lupins
- High energy fibres like sugarbeet pulp or lupin hulls
- Full fat soybean
- Copra meal
- Oils, with a preference for flaxseed oil
- Australian stabilised rice bran
- Extruded barley; and
- Oats

Note: If you are feeding grains or grain-based feeds, 130 g/day of Digestive EQ can be added to these diets to add digestive enzymes that will help improve the digestion of the starch.



FEEDING BEFORE COMPETITION

Having done all the work of making sure your OTT is fuelled up and ready to go for a competition, there are two things you should do immediately prior to competition to make sure you don't inadvertently bring your hard work undone.

These are:

1. Feed hay and provide water right up to competition; and
2. Feed your last grain-based feed at least 5 hours before competition

Provide hay and water right up to competition

Giving hay and water right up to competition makes sure your horse's stomach is full of fibre and saliva, to protect them from squamous gastric ulcers. And it makes sure your horse has all the water they need on board for proper hydration.

Plus, it keeps sending fibre through their gut to add to the fibre already in the hindgut fuel tank for VFA production.

It also keeps their stomach comfortable so they can concentrate on you and not be distracted by pain created by the acid splash that would occur if their stomach were empty during competition.

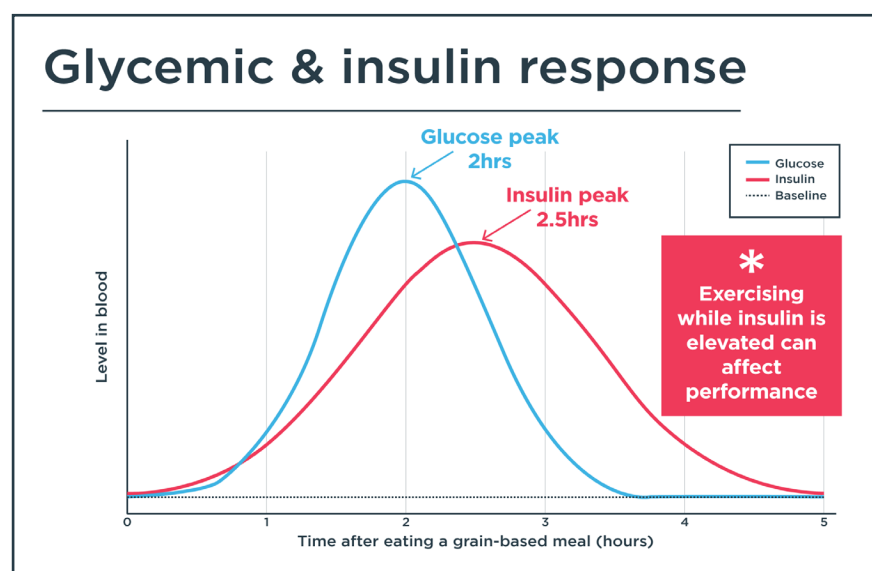
Feed your last grain-based feed at least 5 hours before competition

Feeding grain or grain-based feeds **within** 5 hours of competition means your horse will potentially still have elevated insulin levels going into competition.

This sets up a wrestle in the muscles where **insulin is telling the muscles to store energy away**, but **work is demanding they release energy to burn for fuel**. And it is a situation that can lead to a fatigue-like state that may affect performance.

If your competition is in the early morning and you can't convince someone else to get up early enough to feed your horse 5 hours before you ride, you are best to hold off that feed and give it after competition ends. 🙄

Which is the perfect segue to our next topic, feeding for recovery!



FEEDING FOR RECOVERY

There is a lot that goes into feeding for recovery after intense competition, but let's stay focussed here on feeding for the recovery of energy supplies so your horse can be fuelled up and ready to go for either the next phase of competition or the next competition!

Your priorities are to:

1. Replenish electrolytes and rehydrate your OTT
2. Get the gut full of fibre again; and
3. Top up muscle glycogen levels

Let's look at some strategies to do each of these well.

Replenish electrolytes and rehydrate

During competition, your horse will sweat and lose significant amounts of water and electrolytes, creating at least some degree of dehydration and electrolyte deficiency.

For muscle energy recovery to happen, the most important first step is to replace electrolytes and rehydrate your horse...

Which would be easy, if it wasn't for your horse's annoyingly complicated thirst response that will often leave a dehydrated horse NOT feeling thirsty!

There are two little tricks you can use to get your horse rehydrated:

Trick #1 - Slightly salty water

If your horse will usually drink a bit right after competition, you can offer their first drink as slightly salty water.

Research shows that horses offered slightly salty water first, drink more than 60% more water during initial recovery than horses offered fresh water straight away.

To make the slightly salty water:

Mix 90 grams of ordinary table salt in 10 litres of water. Allow your horse to drink as much as they want of the salty water.

THEN, after they have drunk what they want and taken a break from drinking, their second drink of water you offer **MUST** be fresh, unsalted water!

Two important rules are:

1. You will need to get your horse used to the slightly salty water by offering it after all your training rides; and
2. It is **really important** that you **never ever ever leave your OTT with only the salty water to drink!** Always offer fresh water after that first big drink!



Quick tip:

Weigh out 90 gram lots of salt into labelled ziplock bags to travel with, so you can very quickly make up the slightly salty water when you need it!

FEEDING FOR RECOVERY (CONT..)

Trick #2 – Electrolyte pastes or powders

If your horse won't drink after competition or won't have a bar of the slightly salty water, using a quality electrolyte paste or putting a full dose of electrolyte powder in a small feed is a useful strategy.

Follow manufacturer's directions for dose size and **always always ALWAYS** make sure your OTT has **free access to water for at least 3 hours after you give the electrolyte**. The electrolytes will make your horse thirsty and it is incredibly important they are able to drink as much as they want after you give them electrolytes.

Watch Video 11 – Supplements and Your OTT for help with selecting high quality electrolyte products!

Get the gut full of fibre

The next step in recovery is to get fibre into your horse's gut again. **Filling the gut with fibre reduces the risk of ulceration and feeds the hindgut microbes**. Plus, it helps with rehydration and overall gut health.

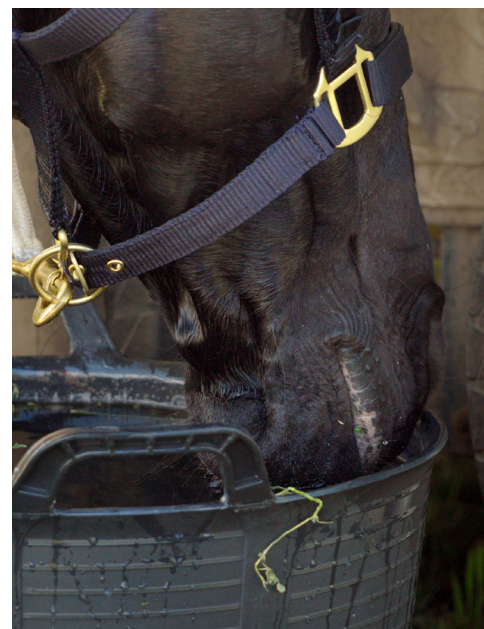
My preferred way to do this is to **feed half to 1 kg of lucerne hay immediately after competition** and then **make sure your horse has constant access to grassy hay**.

Top up muscle glycogen levels

If you have managed to rehydrate your horse and replace electrolytes, topping up glycogen becomes easy... you just need to **feed your horse their usual digestible grain or grain-based feed... boiled grains or extruded feeds are ideal!** These ingredients provide a ready source of glucose for the muscles to replenish their glycogen.

You should **aim to feed your digestible grain or grain-based feeds within the first 1.5 hours after competition**. And where exercise was intense and a rapid recovery is required, for example, after the eventing phase of a 3-day event, feed small, extruded or boiled grain-based feeds every 8 hours.

But remember to be careful not to feed grains within 5 hours of your next phase of competition!



THE IMPORTANT BITS

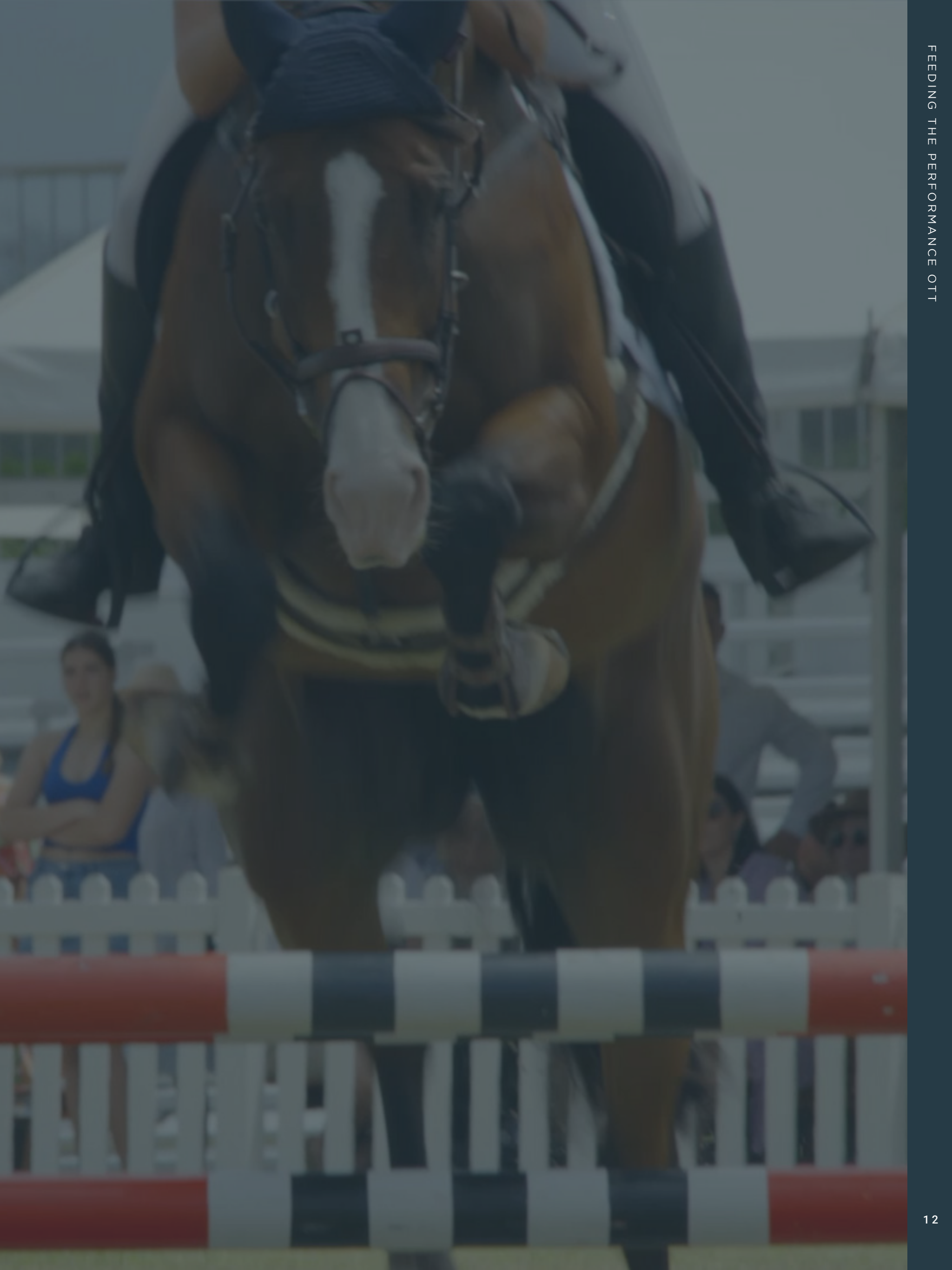
Performance OTTs are incredibly willing horses and they have a massive capacity for exercise when filled with the right fuel before exercise and well supported in recovery.

To help your OTT give you their very best performances, remember:

1. **Your OTT operates on a dual fuel system, with VFAs that flow constantly from the hindgut and glycogen stored in the muscles being their two primary sources of fuel.**
2. **Feeding a high forage diet and keeping the hindgut microbes healthy makes the hindgut like an always fully charged battery for your horse.**
3. **Feeding small amounts of digestible grain allows your OTT to keep their muscles full of glycogen.**
4. **Before competition, feed hay and give access to water right up to the time of competing, but don't feed grain-based feeds within 5 hours of competing.**
5. **After competition, it is important to quickly rehydrate your horse and top up their electrolytes. Slightly salty water and electrolyte pastes or powders can help you do this.**
6. **Plus after competition you need to feed hay so they can fill their gut with fibre and provide small digestible grain meals so they can top up their muscle glycogen; and**
7. **Make sure that any diet you feed is balanced to meet all vitamin and mineral requirements.**

Too often I see performance horses on high grain diets that don't allow the horse to take full advantage of the unbelievable source of VFA fuel their microbes produce for them in the hindgut.

Keeping your performance OTT's diet high in forage, with controlled amounts of grain will allow your horse to make full use of their dual fuel tanks. This will give you **maximum performance capacity and stamina!** And that, as a competitor, is an unbelievable feeling!!!



ENJOY THE
JOURNEY