AN ARTICLE BY EMMA HARRIS

Principles of Rider Fitness, Posture & Biomechanics

WHAT DO WE KNOW?

Most the of research has been done around Eventing and Show Jumping where the recommendations are to stay in peak physical condition to help minimize falls; a tired unfit rider's lack of balance and unpredictable movements can disrupt a horse's rhythm and balance. Horse & rider should be viewed as a partnership, a single system that engages two athletes.

Everything in riding happens in milliseconds and staying fit can create a defence response (such as when your horse spooks and shoots to the side at 60mph). There is a steady increase in Oxygen consumption in dressage and during during cross country, the human body works at approx. 75% VO_2 Max. **VO_2 Max is the maximum amount of oxygen your body can use, or maximal oxygen consumption.** When you are exercising, your heart and your lungs are working hard to pump oxygenated red blood cells around your body to the muscle tissue, where the oxygen is being used. The more oxygen your body can use, the more your muscles can work. Improving it will enable you to increase the time you are able to do moderate or high intensity exercise. It should also make that exercise feel easier.

You can burn approximately 350 calories an hour when trotting, compare this to walking (on your own 2 legs) at 3.5mph which is 314 calories an hour, and cycling less than 10mph burns 292 calories an hour.

FITNESS - the condition of being physically fit and healthy AND being suitable to fulfil a particular role or task
POSTURE - the position in which someone holds their body when standing or sitting
BIOMECHANICS - the study of the mechanical laws relating to the movement or structure of living organisms

REQUIREMENTS OF RIDING

Studies have shown that there is a small increase in muscle mass and a small decrease in fat mass over time as we ride. Our Heart Rate increases and our calorie consumption increases. This is perhaps not surprising, as we know it's hard work. Higher levels of effort are required by elite riders

BENEFITS OF RIDING

- **Physical Benefits:** muscle strength, agility, weight sustainability, co-ordinability between organs
- **Mental Benefits:** self-confidence, sensor coordination, spatial sense

Walking (on the horse) has a therapeutic effect on the rider, this is due to the harmonized movement pattern. An increase of walking speed and change of direction stimulates the rider's balance reaction. Horse Riding is an aerobic exercise, in fact, horse riders have the similar respiratory capacity compared to a football player. Horse riding improves women's muscle strength, muscle endurance, balance, flexibility and remarkably femur muscle strength and its endurance.

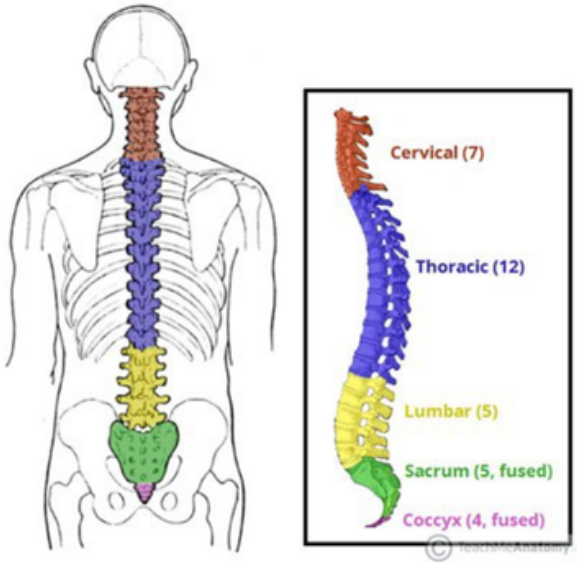
A study looking at dressage riders & horses had the riders complete and 8 week core programme – 3x a week, each session was 20minutes. The results of this study found that the distribution of the riders weight evenly on both sides improved and the horse's stride length increased (both at sitting trot). The study also found that more experienced riders utilised their core muscles more when they rode; the core is engaged when you sit on the diagonal in trot and that the back dimensions of a horse can change within 30 minutes of exercise.

INTRO TO HUMAN ANATOMY

The spine has natural curves, these natural curves protect the vertebrae and along with the discs act as shock absorption. The spine keeps us upright and is an attachment for our arms and legs etc. While it is for support it is also flexible; the Cervical spine (in your neck) is the most flexible

longside the bones of the body, there are muscles, tendons & ligaments. Essentitally the body is a system of the levers (the bones) and pulleys (the muscles & tendons). Muscles work in pairs; while one contracts, the other relaxes and there are other muscles that assist in the movement and some that help to stabilise throughout movement.

The body has an anterior chain (the tissues down the front of the body) and a posterior chaing (the tissues down the back of the body) and will respond to the demands placed on it - this can be positive such as controlled and balanced exercise or negative such as adaptations through poor posture, inefficient movement or injury.



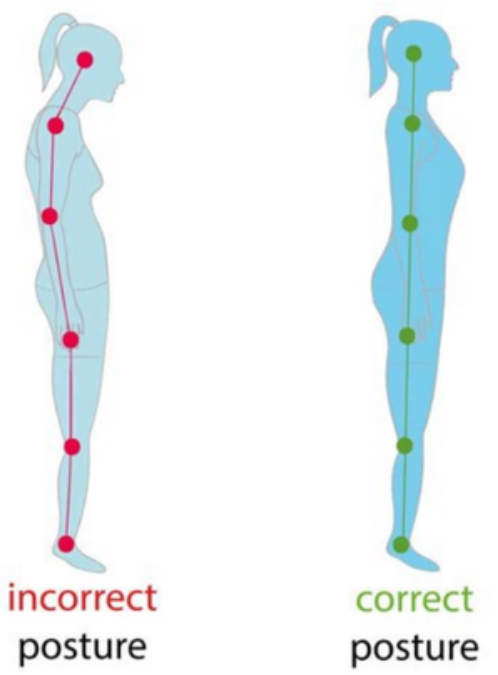
ALIGNMENT

Correct alignment is when each part of the body is in the correct place relative to another part such as:

- **Standing** - ear, shoulder, hip, knee, heel
- **Riding position** - ear, shoulder, hip, heel

Alignment can also be viewed from the front and the back and it is important that we do this to get an all round and true picture. It is highly unlikely to ever be truly be symmetrical so we aren't looking for perfection but we are looking for balance and efficiency of movement. If you have some misalignment standing, sitting, generally every day then being in saddle won't correct this. In fact it is likely that it will affect the way your horse goes. For example, if you have a slight left hip hike (your left side of your pelvis sits higher than your right, this can be seen as a sharper waist curve) then when you ride you will likely find it harder lengthen your your left leg and wrap it around your horse. Your weight will be more on your right seat bone so your horse may feel like he always drifts or falls to the right as he attempts to stay balanced underneath you.

The Centre of Mass is the point at which the mass of the body if evenly distributed in all directions, and horses will try to align their centre of mass with ours. In lateral work the horse steps underneath to catch the rider's weight. If we shift our wieght or have a postural imbalance, the horse will try to stay in balance



THE PELVIS

The pelvis takes a lot of load and is where a lot of movement is generated from; try walking without moving your hips! When our glute muscles work correctly (the large engine muscles in your bum) our hip flexors (across the front of the hip) should stretch enough to allow the pelvis to move. If you have tight glutes then you will struggle to get into adequate saddle position. Riding also requires external rotation of the hips which can cause tension in the piriformis (another muscle in the buttocks) which can lead to sciatic, hip and lower back pain.

Rider asymmetry can be seen to affect the horses's thoracolumbar spine, this is the area under the saddle and just behind the saddle. It can also affect front and hind limb loading of the fetlock. As a riders it is important that we aware of our effect on our horses way of going.

WHAT CAN WE DO?

If you have too many aches and pains (and these are not neccessarily injury etc) this it is likely that the muscles responsible for movement are also working for stabilising and effectively over working.

You should look at impoving the movement through your hips with exercises such as a deep squat position (you may need to have your heels raised), a childs pose and/or a frog stretch as well as hip hikes on a step. Flexibility & mobility for your whole body including your spine should be considered as well as core exercises. You will also need to think about any imbalances you may have through your job, old injuries etc. You may need to seek analysis or support from a physio, therapist or personal trainer who will be able to advise you on any specific postural exercises.