

The importance of conditioning and flexibility



The science behind it all...



Who thinks coaches make you condition just to be mean or annoying?

Who thinks conditioning is boring and pointless?

You might know that conditioning is good for you but do you actually know WHY?

I'm going to talk you through some of the science behind what happens to our bodies when we condition



Warm up

During a warm up your heart rate increases, this pumps blood around your body faster which then has the effect of warming up your muscles.

When muscles become warmer they are more pliable. Pliable means more flexible and will be easier to stretch.

One way to imagine it is thinking of your muscles as a piece of blu-tack. When blu-tack is cold it will snap when you try to stretch it but when its warm it will stretch much further.



Cardiovascular system

Your body is very clever- when you even think about exercising your heart rate increases to pump blood around your body and supply your muscles with oxygen and nutrients. This is called anticipatory rise. The more we exercise our heart by doing cardio training, the stronger and thicker the walls of your heart will become. This will allow your heart to pump more blood in each heart beat.



The cardiovascular system in trampolining



Conditioning such as running, skipping, burpees and anything that raises your heart rate increases the thickness of your heart wall.

Stronger heart walls means that your body can get more oxygen and nutrients from your blood.

This means that our muscles are less likely to ache and we are less likely to get out of breath during a routine or at the end of your go.

If you don't get as tired or sore during training then you will be able to work harder for longer and learn more moves and make more improvements.



Muscular system

When you take part in exercise and conditioning you activate certain muscle groups. When these muscles are contracting they form micro-tears. These are very small rips in the muscle and are important so that the muscle can grow back bigger and stronger.

When you repeatedly exercise your muscles and rest and eat the correct foods then your muscles continue to grow new tissue which will increase the size of your muscles, this is called hypertrophy.

As the size of the muscle increases, the more force it can produce also increases. More force = more strength.

When your muscles are contracting and working, they require oxygen to keep working. The more exercise you do over a longer period of time, the more efficient your body becomes at storing oxygen ready to use during exercise.

The more your muscles work for longer periods of time, the easier it gets for your muscles to continue contracting over longer periods.



The muscular system in trampolining



Any conditioning where you are contracting your muscles such as squats, v-sits or dish will result in your muscles getting larger and therefore stronger, as we explained with micro tears.

Stronger muscles are super important in trampolining as they allow us to bounce higher, make tighter shapes and hold shapes for longer.

In DMT stronger leg muscles allow you to run faster and generate more power to be able to perform mounts and moves higher.



Skeletal system

Osteoclasts are bone cells in charge of destroying and cleaning away old bone tissue. When we exercise and put weight on these bones we stimulate more of these cells. Osteoblasts then build new stronger bone tissue.

Around some of your joints you have synovial fluid which is a liquid that helps lubricate the joint and allow it to move around easier. When you take part in exercise you produce more synovial fluid which helps your joints become more mobile.

Exercise can increase the amount of collagen in your muscles, tendons and ligaments as well as increasing the thickness of the cartilage at the ends of your bones.

The skeletal system in trampolining

New bone tissue makes our bones stronger which means they are less likely to fracture or break if you land wrong. The increase in the fluid around your joints allows the joints to move more easily, this is important for simple moves such as straddle jumps but also in tuck and pike somersault shapes where your knees and hips need to be able to move quickly. As you make more collagen your ligaments, muscles and tendons get thicker and therefore stronger. Strong ligaments are important for keeping your bones in the right place and tendons help connect your muscles to your bones so it is important that these are as strong as possible to prevent injury.



Respiratory system

Repeated aerobic exercise increases the strength of your respiratory muscles which allows your lungs to take in more air per breath and exhale more air per breath. Endurance training can slightly increase your lung volume. This means your lungs can hold more air.



The respiratory system in trampolining

If your lungs can hold more air then you need to breathe less often which means you wont become as out of breath. If you don't get as out of breath easily, you will be able to train harder for longer and make the most out of your training sessions. Endurance training such as running or skipping can improve your respiratory muscles.



Nervous system

Your muscles are formed from lots of muscle fibres, motor units tell your muscle fibres to work but we don't often use all of our motor units. The more resistance training you do, the better your nervous system is at switching on motor units are making more of your muscle work hard. The pathway of nerves between your muscles and brain becomes faster the more you practice exercises and your muscles eventually contract faster.



The nervous system in trampolining

In trampolining it is important for us to be able to use as many of our muscle fibres as possible as this means your muscles can then exert more power allowing us to bounce higher and run faster. The more we practice conditioning the faster our brain sends signals to the rest of our body. So practicing tuck v-sits with lineouts not only increases your muscles but improves your nervous pathway so your lineouts become faster.



The importance of rest and recovery

When you exercise your muscles produce lactate, the harder you work the more lactate you produce. It is this lactate that makes your muscles ache or feel sore. It can take between 20 mins and 2 hours for the lactate to be broken down by oxygen.

Research has shown that active recovery removes this lactate faster, for example going for a short walk after doing some conditioning will prevent your muscles from aching more than if you just lay down after conditioning. This might help you understand why a cool down is important.

Rest is also important to allow your new bone tissue to form and the micro tears in your muscles to heal.



Flexibility

So we have already learnt about why a warm up is important, so you should know not to do any stretching until you have started to warm up your muscles first. Flexibility is important in trampolining to help us form tight shapes in our somersaults but is also really important for preventing injury. If your joints are not flexible, when you try to perform a movement you could 'pull' that muscle and the muscle will then feel very sore. The more you perform little stretches on your muscles, the more it is likely to improve long term. If you do lots of stretching just once you may see improvements straight away but they are likely to be gone a week later. Whereas if you practice little and often you will see more consistent longer lasting results.

