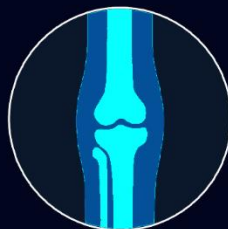


JOINT REBUILDING WORKOUTS



by Liam
Rodgers



Joint Rebuilding Workouts

Liam Rodgers

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Part I: Understanding Joint Rebuilding Workouts

Introduction

We've all experienced joint injury at some point – and they can be **miserable**.

Joint injuries are not only painful, but limit how we can move and will often flare up just in response to everyday activities. These are some of the most unpleasant experiences – especially as we get older, during **severe** joint injury, or in debilitating cases like in lower back, hip, or knee pain.

When we begin to recover from joint injuries, one of the most important things is **what comes next**.

Joint-rebuilding workouts are a great way of improving your recovery and long-term health. They can help accelerate the well-managed recovery and rehabilitation of weakened or post-injury joints, as well as building up the characteristics and tissue strength needed to prevent re-injury or future damage to that joint.

High-quality joint rebuilding workouts are not just about rebuilding, but also strengthening and protecting for better quality of life, performance, and health into the future.

In this guide, we're going to look at some of the most effective ways to use workouts to rebuild joints and then improve their **longevity and strength**. We'll be going from completely untrained (but pain-free) movement, all the way up to strengthening and even adding in dynamic movement to keep joints strong and healthy.

Workouts will be very general in **loading**, but will be very specific in the choice of smart exercises to develop better health and joint strength. This means that you can work along with any of these workouts using lighter or heavier loads.

This means that anyone – from completely untrained to elite athlete – can use these workouts to rehabilitate their joints and build long-term strength. The goal is to progress patiently through them and practice good movement every workout in every exercise.

The smart development of these workouts means they will build strength and supporting muscle mass around a joint – but also the coordination, control, and movement patterns needed to keep that joint healthy in everyday life, and even high-performance scenarios (like workouts and sports).

Disclaimer

Joint injuries can be incredibly complex and dangerous. Ensure that you've conducted a thorough discussion with your doctor or physiotherapist regarding the nature of your injuries, the risks they pose, and your time of recovery. It's essential to make sure you're ready for exercise before loading up joints that have recently been injured.

Ensure that you've gotten the green light from your appropriate medical professional and remember that *this is not medical advice and does not substitute for your prescribed exercise from your medical professional.*

Joint Health – The Importance and the Statistics

Your joints are some of the most common places where injury happens – and that can be for many reasons. They might get injured in response to a trauma during a fall, when you perform exercise, or simply during everyday life.

You've almost certainly run into these problems in the past, even if you've not given them much thought. They turn up relatively often when we roll an ankle, or perhaps when straining a tendon during everyday life.

The point is that these kinds of injuries occur often due to the fact that joints move – they're the areas where tissues are not rigid, and they will take the **impact** of movement. This will be an

important concept, but the point is that **joints move and get injured**, while unmoving parts of the body like bones typically don't get injured as often.

Joint injury is incredibly common – even in more severe forms.

Around **80% of people will experience debilitating back pain** in their life, and that's only one kind of joint pain. You can add on top of this the other most common types of pain like knee and hip injuries, or repetitive strain damage to the shoulder, elbow, or wrist.

When you overlap the risks at each of these joints, it's obvious that we're actually quite vulnerable to joint injury. This guide takes this common joint injury risk as its starting point: what do you do once you're injured? How do you rebuild and strengthen joints? And – ultimately – how do you prevent re-injury of that joint in future?

We're going to look through a few of the most important things you need to know to build stronger joints – either after an injury, or as a way of preventing one:

1. **What are joints and what do they do?**
2. **How do your joints move and function?**
3. **How do workouts affect your joints in the short- and long-term?**
4. **When can you perform workouts after a joint injury?**
5. **What workouts can you do to improve joint strength?**
6. **How do you prevent re-injury?**

By learning these most-important principles, you'll know what your joints do, how you can take care of them, and what these workouts can offer you in terms of better health and resilience to injury in the long-term!

What Are Joints?

Joints are the junctions between bones, and they come in many forms. We're going to look specifically at the joints in the limbs and spine, which are **synovial joints**, the most commonly thought about and important joints for moving around the world.

Joints are the areas of the body that take most of the compressive and impact forces due to the fact they can compress and move – unlike solid structures like bones. This makes them susceptible to injury, with injuries in joints and their closely-connected tissues making up the brunt of most musculoskeletal injuries.

What's in a joint? What are the main needs and ways of supporting recovery?

When we talk about rebuilding joints, strengthening them, and reducing injury, we're talking about **synovial joints**. These are the largest and most important joints for movement, such as the elbows and hips.

We also want to focus on the most commonly injured joints and how we change them. The principles of this guide will work with all joints, but our workouts will focus on the most commonly-injured and easily-strengthened joints:

- Wrists
- Elbows
- Shoulders
- Hips
- Knees
- Ankles



We'll also take a little extra time to focus on the **set of joints making up the spine**. That's because back pain is both the most common and one of the most dangerous ways to get hurt.

Smaller joints like those in the hands and feet are also commonly injured, but are very complex and don't take well to larger workouts. Those kinds of joints are typically best served by seeing

a specialist and working through exercises that often involve joint-strengthening putty, rice bucket exercises, or similar forms of strengthening.

We're going to focus on these big joints that are better able to take load, develop with strength exercise, and are integrated into large and important movements. While toe injuries are definitely a problem, they're not likely to be as much of a dent in your life as debilitating back pain, for example.

Bones

Bones are the major moving parts in joints – since joints exist to allow articulation of bones relative to each other. **Basically, bones are the things that are *joined* in your joints and they're there to move through different planes of motion within the joint itself.**

Bones are important in joint injury because they're typically going to take some of the brunt of joint injuries. Damage to soft tissues and connective tissues are very common, but bone-friction and degradation can be very serious complications from a simple joint injury, if you don't take care.

Common problems like loss of mineral density in inflamed bones can cause cycles of problems – especially in older people. Taking care of bones with proper recovery, exercise, diet, and sleep are all very important and can stave off major concerns like osteoarthritis and osteoporosis.

Bones are strengthened by compressive loading and impact – the two main forces that also cause degradation. It's about getting the right amount of load and the right amount of recovery to induce recovery and support better overall growth and strengthening of the joints, bones, and other tissues.

Bones are not just skeletal scaffolding. They change over time with exercise, sleep, and nutrition – so you should keep them in mind when joints are being trained, injured, or re-built!

Tendons

Tendons are the strong, elastic connective tissues that tie bones to muscles and allow them to be acted on by the mechanical force of muscles. These are the main connector in the muscle-tendon-bone sequence, and they transfer the force from your muscles into the bones, as well as being the single most commonly-injured part of the joint.

The tendons are a collagenous structure – they're made of high-strength collagen proteins and small leucine-rich proteoglycans (SLRPs) – which is important for how they recover, especially in diet.

Tendons are slow to recover relative to muscles and have a relatively small blood supply.

They recover through low-intensity movement, where they experience a greater supply of nutrients – which is also going to be important to how workouts help tendons get stronger and recover.

Ligaments

Ligaments are even stronger than tendons, but they lack a lot of the elasticity and recovery capacity. Ligaments connect bone to bone which makes them a common injury site during momentum-based injuries. This is especially common in the knees in sport, in small relatively-weak ligaments like the ACL and PCL.

Ligament injuries are, fortunately, less common than tendon damage but they do tend to be far more severe when they happen. **Ligament damage is one of the more restrictive types of joint injury since the recovery is so slow and they're not elastic.**

Ligament tears and detachments often require surgical intervention, which can be quite a complex process. Strains of ligaments, where they are lengthened beyond healthy limits, are both more common and less severe, and those are going to be the main target of these workouts.

Post-surgical ligament rehab is a discussion you need to have with your doctor and will not be the main focus of this guide.

Joint rebuilding workouts will primarily be useful for those who have recovered from the primary pain and limitation of ligament strains. They may also be suitable after a full recovery from detachment or tear surgery, but that is specific to your case.

Cushioning and Supporting Tissues

Aside from the major movers in joints, there are also smaller secondary tissues that are there to maintain joint integrity and prevent unwanted contact in the joints. Within the **joint capsule**

These include:

- **Bursae:** fluid-filled sacs that are designed to compress and support bones
- **Cartilage:** all-purpose collagenous tissues for stability and joint-reinforcement
- **Discs and menisci:** dividing tissues that prevent bone-on-bone contact in joints
- **Acetabula:** a “socket” of connective tissue found in ball and socket joints like the hip to locate the “ball” properly in the joint and allow it to move
- **Synovial membrane:** a connective tissue layer that covers the bones and connects them to the joint capsule itself

These tissues are largely dependent on collagen and act to reduce unwanted interactions between harder tissues in the joint. They also provide additional stability to the joint, especially laterally where they connect to different parts of the joints and form a stronger, full-joint system.

These aren't going to be the direct focus of this guide – they're quite specific and hard to remodel comparably to something like tendons – but they will be considered. These will mostly be discussed in avoiding damage, degradation, and even in the diet/sleep impact on the joint.

How Joints Move and Function

Joints are moved by muscles, but are also subject to movement by external force. For example, when running, you're both moving the joint by your own muscular effort, but they're also subject to the force of landing – where the ground pushes them around.

The tendons exist between these two, connecting muscles to bones, but also storing those landing energies in an elastic form as they stretch and shorten. Movement in the joints is typically the result of a combination of these forces, especially in the lower body where ground forces are higher – in the ankles, knees, hips, and lower back (in order of severity).

Movement through the joints is also typically the result of **multiple muscles working together**. While the knees are mostly extended by the quadriceps at the front of the thigh, they're also stabilised by muscles on the inner thigh and buttocks, which make movement around joints quite complicated.

This provides a hint at how we're going to build stronger joints: strengthen joint tissues, develop the main muscles and their opposite (**antagonist**), developing the stabiliser muscles, and then train exercises to integrate them all into real-world movement.

Muscles Move Joints

Joint movement is the result of muscles pulling on tendons pulling on bones. This is a crucial factor and the muscle-tendon-bone sequence is one of the areas that we're going to train most when rebuilding joints and developing stability and long-term health in them. It's also the sequence which is **most likely to be injured in the first place**.

Myotendinous junctions are the bits where tendon and muscle meet. They're not as elastic and strong as tendons, but they're also not as flexible as muscles. This is why joint injuries typically occur at this '**MTJ**' – and why they require careful management when re-strengthening and rebuilding joints.

The other major tissue involved in movement in joints are the ligaments. These are not as elastic as tendons but are incredibly strong. These connect bone to bone, maintaining a stronger “frame of reference” for movements and limiting the extreme ranges that you can move through. Ligaments are harder than tendon and act to prevent your bones moving “disconnected” in the joint.

Other Tissues: Keeping Joints Safe and Reliable

Other tissues in the joint are typically there to make these movements easier and reduce friction. The bursae, fat pads, cartilage, and hyaluronic acid in the joint all reduce the contact of tissues on each other and reduce the risk of major, unwanted friction that might cause long-term problems.

These tissues are going to develop over time with loading, but the main goal is to not over-stress them or cause them issues. Bursitis, cartilage degradation, and the decay of the fat pad are all possible problems at a medical level, but they’re complicated and you can’t just exercise them.

These areas are particularly tied into areas like diet, sleep, and vitamin/mineral intake. They can be managed, but aren’t in sequences of tissues you can directly train in the same way as the muscle-tendon-bone complex. They’re not unimportant, they’re just outside the scope of this guide and require specialist medical examination and planning if you’re experiencing severe issues.



How Workouts Affect Joints in the Short- and Long-Term

Workouts typically offer a range of ways to improve the strength and health of your joints. They aren't all identical in their effects, and the way you train will be a significant factor in what changes – and how.

The most important thing to remember is that human tissues adapt and remodel in response to stress. This means that muscle, tendon, ligament, and bone are all going to adapt when you place them under the loads used in exercise. Workouts to rebuild joints are simply workouts that use more-cautious loading and very specific types of movement to strengthen these tissues.

The muscles are a very obvious and intuitive area to strengthen – but what about tendons and ligaments? What about the bones themselves? The loading of these tissues is a little more complicated but the most important factor is that they're slower to adapt and recover than muscles.

It's been estimated that **tendon recovery and remodelling is around 5-10 times slower than muscular recovery and development.** This kind of change is going to be a major factor in the most important thing to remember: joint strengthening and rebuilding workouts require lots of patience since they occur over months.

How Tendons and Ligaments Respond to Workouts

Tendon remodelling is similar to the way that muscles develop: by applying stress to them, you can develop the density and cellular health of tendons. They produce significant change to both the toughness and the elasticity of the tendons – one of the most important developments for rebuilding joints and preventing future problems.

The stressing of tendons produces a mechanical tension, which is detected by the tendons. This is the same way that muscles develop. This occurs during the resistance of tendons to load (e.g., when lifting a weight) or when they cycle through their elastic function, offering similar but not-identical stimulus for growth.



In response to mechanical tension, some tendon cells and tissues will degrade. This is inevitable. The body's response (when properly rested and fed) is to produce more high-strength collagen proteins and SLRPs to replace those damaged and, usually, strengthen the tendons structure by adding more than were lost (again, if properly rested and fed).

Breakdown of tendons occurs when there is too much stress and not enough recovery. This produces a negative balance of tissues lost to those gained. On the other hand, **a positive balance happens with proper recovery, nutrition, and rest.** This increases the density of tendons with greater collagen links and an improved structural and neural response from tendons in future.

The goal of training is to produce both kinds of mechanical tension signalling on the tendon – from loading and from elastic stretch-shortening. The former is easiest with resistance or bodyweight exercise, while the latter develops in response to power and landing-rebounding forces. The former is easier to recover from, however, and the latter is harder.

This is why **workouts in this guide are built around a progression from slow to fast, and from static to dynamic.** Power exercises in particular are quite difficult to recover from – especially since you can't feel the loss of speed and tendon-stiffness most of the time. These workouts in this guide are considerate of tendons, but progressing through them too quickly does introduce a lot of loading too quickly.

Strengthening the Ligaments: Patience and Nutrition



Developing ligaments is arguably even slower than the tendons and proceeds at a glacial pace. Damage to your ligaments will require an even more patient and piecemeal development over time with a focus on slow loading and control.

As with tendons, the development of ligaments will develop through significant time under tension and muscular control in various positions. Time spent in holds, slow-lowering exercises, and dynamic stability training will be even more effective for ligaments and tendons than other benefits.

The difference between tendons and ligaments' remodelling is – for practical purposes – simply the pace. Ligaments are even slower and typically do not take up as much of the impact-load as tendons, as well as being a non-elastic tissue. If you're recovering from ligament damage, the same principles apply as in tendons, only more so: be patient, work diligently, and reduce unwanted loading.

The most important factors for ligaments are in the recovery after workouts, where proper nutrition and sleep play an even larger role. The chronic use of good nutrition and sleep habits make ligament health far more reliable, and are measured in months and years.

Recovery After Stress

After stress from workouts, it's essential to provide adequate time and resources to make recovery and remodelling the tissues of the joints. This is also important to prevent the worst possible changes – like the over-stress and degradation of the joint tissues.

The focus on proper rest and recovery both prevents negative outcomes, but also makes good ones possible. Better recovery factors are directly related to the quality of results and the long-term resilience of joints themselves. This happens at every level: muscular, connective tissue, neural, and even hormonal.

Rest

Taking proper rest after workouts is essential to take care of joints – even more than muscles. When we lack rest, the muscles around the joints provide improper and inadequate support – especially during high-impact and complex movements. Even after this, the structures themselves are under greater stress with its slower, limited recovery.

Rest is by degrees – the more restful your rest, the better the long-term effects. The first place is to simply avoid consistently training when you should be taking time off. This is about spacing training and rest days properly – which is decided based on your personal experience and what you've practised.

Secondly, it's about reducing your total exercise and using lighter workouts between heavier ones to reduce the recovery demands. These are a great way to lighten load and promote delivery of nutrients and blood to the muscles and other tissues. This means reducing either the volume or intensity of workouts.

Dedicated Deload Periods

You should always make this a personal experience that is designed around your own recovery and schedule. The whole point is to regulate yourself according to how you feel and recover. It's

always useful to take periods of deliberately scheduled light training, or reducing regularity – a deload phase.

This is a good idea every few weeks or months, as a way to let the body recover. The longer you spend between deload phases, the longer each phase should be. **You can typically get a good 3.5 weeks of loading in lighter exercise, and ten deload for a half-week.**

Longer and more intense periods will result in a larger requirement for larger recovery periods.

Remember that the more sustainable your progress, the better your overall results. It's not about speed but distance, and the goal of these joint rebuilding workouts, in particular, is long-term health and resilience. Take time to recover.

Food

Food and nutrition are important in every area of life – and even more so in joint rebuilding. This is because the joints themselves depend on a wide range of tissues with their own nutrient demands – muscles connective tissues, neuromuscular junctions, and a wide range of others – as well as the wider body environment.

This makes a pro-recovery diet a great investment in your own results. **This has a few simple components that you should develop over time with deliberate practise:**

- ✓ A high-protein diet
- ✓ Carbohydrate intake relative to your personal needs
- ✓ Fats to support metabolic, hormonal, and vitamin-uptake health
- ✓ Vitamins for important health processes
- ✓ Minerals to support health, background processes, and energy balance

Protein

Protein is the material from which bones, muscles, and connective tissues are made. If you don't get enough of it in your diet, you'll start breaking these tissues down to scavenge it. This can lead to accelerated damage to joints as the speed of breakdown overtakes the speed of repair.

It leaves them with poor structures and the inability to remodel and strengthen effectively over time. It also leads to more inflammatory response and non-protein tissues (like fat) building up around muscles and joints. That can compound injury risk – especially in areas that demand lots of control from muscles, like the hip, knee, and spine.

Get 1-2g of protein per kg of bodyweight and you'll be on the right path. More is typically better for this kind of recovery and growth stimulus. Even more specifically, collagen peptides and gelatine are the best sources of protein for joint repair and strength. They directly support the growth and strength of important tissues.



Carbs

Carbs are the energy source for muscles in particular, which makes them one of the most important ways of maintaining the structures around joints. It also helps provide the bulk of your energy source, which is important for joints' long-term recovery and health.

While muscles rely on carbs more closely, joints are not as closely tied to the speed of energy availability. This means that calorie intake from fats and carbs alike is going to be important and there's not a clear preference for one or the other.

Carbs are mostly important in the muscles around joints, and should be paired with protein to better support these tissues. They should typically be consumed at about **3g per kg of bodyweight**, supporting your energy levels – especially as you increase activity levels and need more energy for your rebuilding workouts.



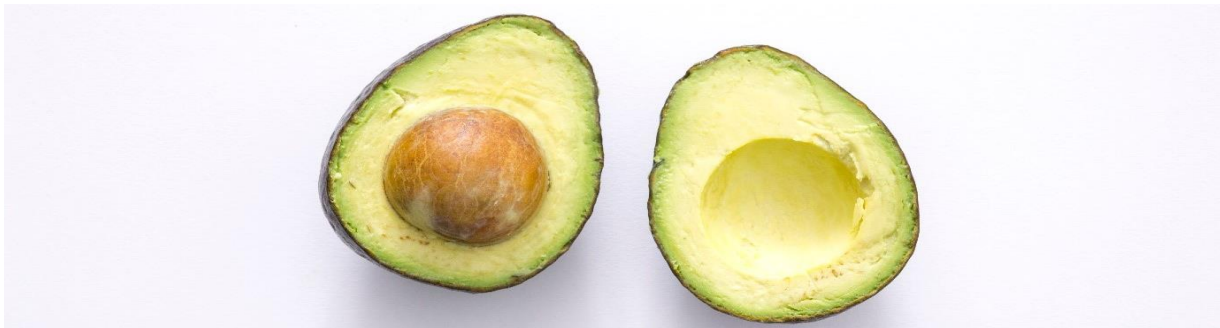
Fats

Fats are important for hormonal health and closely track with the longer-term recovery required for joint health and rebuilding. These are especially important around high-quality fats from seafood, cultured dairy, and high-quality vegetables like olives.

Fats are an important solvent for key nutrients like vitamins A, D, E, and K. These are important for supporting overall health, as well as the background processes that make joint recovery and health possible.

Fats should make up a smaller part of your diet than protein or carbs, and be selected primarily for quality. MCT oils should be your main saturated fats, while polyunsaturated fatty acids should be the priority in your fat choices. These help keep your heart healthy, contribute to better cholesterol profiles, and are generally **anti-inflammatory**.

Overall, fats can't be overlooked, but they also are mostly useful for their vitamin-absorbing and energy-boosting role in the body.



Micronutrients: Vitamins and Minerals

Vitamins and minerals are the micronutrients. Your body uses small quantities of them to support processes around health, metabolism, hormones, tissue building, and proper recovery. This means they play a role in everything from producing the right cells to getting energy where it needs to be – all of which are important for joint health.

The best way to get more vitamins and minerals is to eat a diet rich in whole foods – especially seafood, vegetables, wholegrains, nuts, seeds, legumes, and cultured dairy. These are the nutrient-dense foods that are going to help get the most nutrients for the calorie content, as well as providing other high-quality sources of carbs, fats, and protein in their own right.

The quality of a diet overall depends on the density of its nutrients. This means eating more nourishing foods and relying less on over-simplified refined carbs, protein, and (especially saturated) fats.

Any food that provides protein and vitamins/minerals is a great place to start. After that, making sure your fat (like fish and seafood, Greek yogurt, and avocado) and carbs (from oats, beans, lentils, and vegetables) offer plenty of nutrients will ensure you've topped up with the most important secondary ingredients for health.



Sleep

Sleep makes up an important keystone of recovery as a major stimulating factor for connective tissue strengthening and recovery. It controls the production of essential building blocks like collagen and SLRPs, as well as different types of joint-specific recovery processes and the hormonal-metabolic environment.

On the opposite end, deficit of sleep produces increased joint risk across a wide range of different possible mechanisms. Just like poor rest and poor nutrition, the loss of muscular strength and reactivity destabilise joints, while the joint tissues degrade faster, and the actual quality of your movement decreases and thereby makes complex or high-speed movement a major risk.

That means 8 hours or more of high-quality sleep in a dark, cool, quiet room. If any of these elements is missing or below optimal, you're going to increase the risk of joint injury and reduce the capacity for recovery and strengthening. This is a 2-part process of getting what you need and then using it to improve your strengthening and resilience.

These are important both while recovering and afterwards as you build strength and resilience. Remember, also, that this is about weekly and monthly averages: with the slow recovery and strengthening speeds of the joints, these long-term processes and habits are even more clearly involved in the change to the joints.

Sleep Quality

Sleep is best when it's **high-quality** – a reflection on the restfulness and relaxation that you experience before and during sleep.

You can improve your sleep quality, to start with, by improving your sleep routine. This means **eliminating screens in the 30-60 minutes before sleep to reduce blue light impact and wakefulness**. Changes towards non-screen activities – and ideally relaxing ones – can improve the quality of your whole night's sleep.

Examples might include **stretching, reading, or bathing before bed as a way to reduce your overall anxiety**. This specifically help in the joints and muscles, reducing muscle tension and having a mild sedative effect – letting you sleep more deeply, longer, and with less latency (the time it takes you to get to sleep).



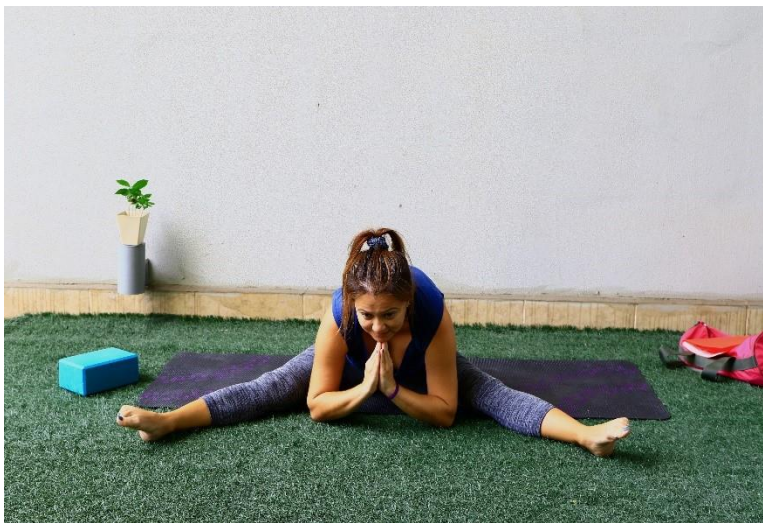
You can also improve your room – your sleeping environment – to get better quality sleep. This means darkening the room to reduce sleeping wakefulness. It

also comes from cooling the room to reduce over-heating and the associated tossing and turning. Finally, you can reduce room-noise through a range of choices to prevent fragmented sleep and, again, tossing-and-turning.

Put time into controlling the sleep environment and your evening habits as a way of improving your recovery. These make significant differences along the recovery and strengthening of joints – again because of the important of **long-term habits**.

If you add **an hour of sleep per night**, and make a few changes to improve the quality of sleep, you're going to see huge differences over an 8-week period for joint rebuilding and strengthening.

Stretching and Mobility



While it's a part of the general focus on movement in and around joints, the development of mobility around joints is one of the things you can do without putting more loading and recovery-demand on your joints. This is one of the best ways to sustainably improve joint health and muscular control and flexibility.

If you get the chance, the best way to improve mobility and flexibility – relieving tension on a joint and its all-time recovery demand – is to mobilise more often. **Simply putting more time into one session every few weeks is far less effective than 5 minutes 2-3 times a day.** This is the best way to control your joint health and relieve acute tension, as well as making it easier to move through full ranges without pain (to make lasting difference).

Stretching and mobility is a lesser factor than many of the other items mentioned, but does offer a great influence without requiring too much from you. You can add stretching to your life during other tasks, or even during watching television. There are many ways to improve your recovery but this is one of the most consistent, reliable, and easy to fit into your life.

The Joints: Everything You Need to Know to Stay Healthy

The joint is difficult to take care of because of the wide range of needs and the difficulty in balancing them all up. We're going to go through the basics of what the joints need and why, highlighting the most important areas to keep in mind – and the factors around which this guide has been written to help you get the best for your body.

Flexibility

Flexibility is the reduction of unnecessary and preventable limitation on joints – the development of the longest possible ranges of motion. This is the first step to returning to normal after joint injury, especially when limitation stems from sensitivity in tissues, loss of muscle mass, or the loss of familiarity with some movements.

Flexibility is foundational for developing strength and control. You can't control movement in ranges you can't even get to. It also offers an important and much-needed direction to returning to regular movement around joint injuries, but without the recovery-demanding loaded movement of full resistance training.

This is why many workouts after joint injury start with completely unloaded movement. This is particularly true in the upper body limbs, where joints like the shoulder and elbow may be completely unloaded in ways that the lower body can't (because of walking or spinal loading while standing, etc.).

❖ How to Build Flexibility for Joint Health

The focus of building flexibility should just be moving through full ranges regularly. Even very light movements maintain and build flexibility around the joint, reducing limitation and opening up more movement in stiff, under-used joints after injury.

Very-light loads and bodyweight exercise provide a great start for the development of post-injury flexibility. Initially, this may just be regaining normal range, and becomes a challenge of building additional flexibility afterwards.

Improving flexibility can be a serious benefit if your injury was related to excessive tightness around the joint. This may be the case in the shoulder, for example, where inhibited **comfortable, controlled movement** can lead to more ranges that are at-risk for injury. In this kind of



situation, loosening off excessive demands (especially those compromising important movements) can really help prevent injury and reinjury.

Exercises that prioritise not only range but force you to control your movement through those ranges are a fantastic choice for building flexibility.

Flexibility can only help reduce reinjury risk optimally **when you use it well**. That means building control in the muscles around the joint and developing better awareness of its position.

Control

Proper control around a joint is about your conscious control over the position of a joint and its component parts. Again, this depends on the development of muscular strength and practice, but is important to turn flexibility into injury reduction.

Control is a major factor in rehabilitation and injury risk in general. In spinal injury, for example, control in the muscles around joints are one of the most important correlations for reducing both initial injuries and then reinjury after joint damage.

Joints have ranges of positions that they are healthy in, where loading and impact are safest – where the muscles are best suited to absorbing and producing force safely. This is also important for maintaining proper loading on friction-reducing elements in the joint like the fat pad and the

bursae. Needlessly loading these tissues without proper joint positioning can exaggerate degradation – especially in joints that had recently been inactive.

❖ Control and Long-Term Movement Quality

Control is the basis for better movement control and the more control you practice through your full-range, the better it prepares joints. This doesn't only improve the speed at which you gain flexibility, but also the movement control you have over the joint and the levels of stress a joint incurs.

Uncontrolled movements are typically very demanding on the connective tissues. The less you actively control your position and landing forces through the muscles, the more likely you are to shuttle that stress into the tendons, ligaments, and even the friction-reducing joint capsule areas like the bursae – as in bursitis.

Control is both about electing the right positions for your joints, improving the activation of muscles to stabilise them, and reducing sloppy movement that may leave your joints taking the brunt of your resistance-load or ground contact forces.

❖ Building Joint Control with Workouts

Control takes the form of deliberate practice with how you move – and the exercises you use. This also means a good variety of movements with deliberate movement. The best, most reliable way to prevent injury is to be strong in all ranges, in all movements, and with proper contribution from all the muscles around a joint.

You can practice this control in different plains of movement – including rotation and lateral movement. **The more control you have over these other movements, the better prepared you will be to deal with their occurrence in your everyday life** – especially in sports and other forms of dynamic, multi-plane exercise.

Being able to do something slowly with control is the foundational step to loading it up either with weight or momentum. The ability to produce, control, and absorb force are key to keeping

your joints healthy. Control is foundational and the exercises in this guide have been selected to help you develop control, at an even higher priority than strength itself.

The most important thing for the development of control is the combination of full ranges, exercises with slowly increasing control demands (e.g., single-leg movements), and deliberate practice. You will have to actively focus on what you're doing with each exercise and remember things like keeping your core active and weight evenly distributed across your foot, for example.

We can give you all the best exercises to help rebuild joint strength and control, but it does require you to actively practise that control. The more you do it, the more intuitive it will become. How you move and the attention you pay are the main currency for better joint- and movement-control.



Strength

Being strong in a range of motion is one of the most important ways to reduce the risk of getting injured in it. The obvious conclusion is that **getting strong in all ranges and movements** is the best way to keep yourself healthy and build better all-around resilience.

This is – of course – easier said than done. Developing strength after joint injury can be difficult as the muscles are likely to have lost strength and size, while the joint itself may still be tender. The immediate goal – just like flexibility – is to rebuild the strength you had before injury.

This is one way to rebuild the joint, but going beyond this to more strength means lower reinjury risk. **Strength training through bodyweight and resistance training also have excellent carryover for strengthening tissues like the tendons which also respond to mechanical loading – just like muscles.**

This is one of the reasons why strength training with full-ranges and a deliberate focus on control is the focus of this guide. It's a three-factor way to improve your joint health by improving the strength and pliability of the muscles that stabilise joints, it helps build control and flexibility in a deliberate way, and the way you develop strength also helps build direct strength and resilience in tendons and ligaments.

Bones themselves also respond in a similar way with the development of a more protein- and mineral-dense bone structure in response to loading.

❖ Building Strength with Workouts

You probably already know how you build strength – you do exercise. The other side is allowing your body to recover and providing the essential nutrients it requires to repair tissues and build them stronger. This is a simple but tricky cycle of stress-recovery-strengthening.

Strength is perhaps the easiest aspect to recover after injury, as long as you put deliberate effort into it. There's no trick to it, **you simply have to do some strengthening exercise with good recovery.** The development of more strength after returning to normal levels is the hard part but is also the main factor in preventing reinjury.

This is particularly important in solving deficiency. Strength deficiency and strength loss around injured joints are the main factors for reducing the strength and resilience of those areas. This is even more important as we age and loss of strength and muscle are leading factors in other reinjury risks like falls and exercise tolerance.

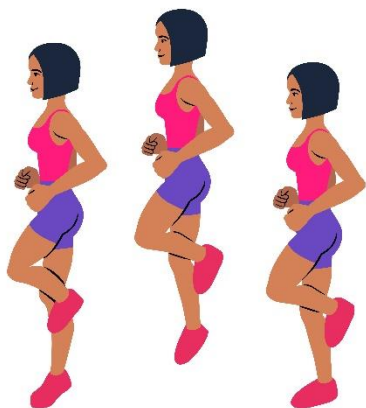
Power and Reactivity

Once you've returned to healthy, pain-free movement with 'normal' strength and flexibility levels, there are more advanced ways to improve your joint health. This is about getting back to good performance in the joints and – once again – preventing further injuries in future.

Power refers to your ability to produce force quickly. It's the main factor in exercises like jumping and sprinting, which are important to joints as slowly increasing power exercise develops the strength of connective tissues in particular.

❖ Don't Be Scared of Power

Many people avoid reintroducing power exercise to injured joints, even later in the recovery cycle, for fear that they have higher impact forces. They do have impact forces, but that's exactly why you should use them – albeit patiently. Smaller, less intense forms of power and bouncing exercises are perfect for tendon remodelling to improve the structural strength of these joint tissues.



SINGLE LEG HOPS

This extends out to the reactivity of force-absorption at both a structural and technical level. First, this means building the structural strength of tendons through jumps and other forms of landing, which help develop the elasticity and strength of these tissues at the same time.

Second, however, **you need to learn to land.** Most people have absolutely no direct training in absorbing force safely and landing. This is one of the most important things to learn and studies show that athletes

who have trained landing mechanics have less injuries in all joints – but especially the lower body where the ankles, knees, hips, and spine are significantly safer.

This is even more important in change of direction exercise, which involves both force absorption, landing mechanics, and then production of force. **Cyclical movements** involve all of

these factors and it makes them both the most realistic training for the real world and the areas where reinjuries are most common.

Despite the common perception, **lots of injuries happen when a tired joint is exposed to a complex loading stress.** Things like bending and twisting in the spine and hips, changes of direction in the ankle, knee, and hip, or simply rapid changes of balance – like slipping. Reactivity and change of direction training are great to simulate these in a controlled environment so you can prepare your muscles and joints.

Exercises like jumps and other high-speed movement, especially on single leg or single arms, are excellent for preparing here. Slow progression is most important, but should be applied to everything from box jumps to single leg jumps, ankle bounces, sled pushes and pulls.

❖ Appropriate Power Training

Training with power exercise, landing mechanics, and changes of direction, multiple jumps in series, and single-leg or lateral jumps. These are quite demanding at maximum effort, but can be built up according to what you're comfortable with right now – as well as performed at submaximal effort to produce submaximal landing forces.

This kind of training is one of the last things to focus on, as it does depend on proper strength, control, and structural health. It's not a way to rebuild a joint immediately after injury, but is an important part of the overall rehab process and one of the most important – but overlooked – ways to prevent reinjury.

Advanced Joint Recovery: Where to Go When You Finish This Guide?

As you return to normal strength levels in other areas, there are advanced training methods that can be used to specifically target connective tissues.

One of the most important factors is the role of connective tissues and other special aspects of the muscles and surrounding structures while lowering weight. This eccentric portion is the section of a movement that is responsible for most of the development of tendon strength and offers the stimulus that is most effective in forcing tendon remodelling.



This makes eccentric overload – where you lower weights or forces you couldn’t lift – an effective training choice. It is quite stressful on the tendon but offers the most effective direct training stimulus. **Things like 2-legs-up, 1-leg-down movements are a great example where the lowering portion forces the use of stabiliser muscles and builds better tendon structure.**

This also has excellent secondary effects like the development of better blood flow in joints with neovascularisation. This is a great development for tendons given their low blood supply and the role this kind of boosted nutrient delivery can have in improving the recovery and remodelling speed of injured joints.

This also carries over directly to the force-absorption and landing mentioned above. Since landing forces are all eccentric – in normal situations – it’s a great way to reinforce your joints against future impact. This is both important for reducing injury risk in change of direction whether in everyday life or for your sport/fitness activities.

How Can You Improve Joint Health? What Do You Do After Injury?

The first and most important part of improving joint health and rebuilding joints after injury is getting proper **medical advice and guidance**. This means contacting your doctor or physiotherapist regarding any injuries and following their advice.

You can't rebuild a joint until it has regained basic function – and your medical professional will typically suggest a period of rest and recovery, as well as the slow integration of deliberate movement and loading.



You cannot skip this step – rushing yourself into the loading phase will be a significant risk and re-injuries are incredibly common in joint injuries. Particularly, tendon and ligament injuries require patience to rebuild. **Excessive loading early on will not only undo recovery, but may exaggerate an injury beyond the initial pain and damage.**

Spend time recovering before you try to get stronger and rebuild a joint. This sequence is essential to keep yourself safe and rebuild your joints in a sustainable, long-term way. If your injury has involved a surgical or other treatment option, be sure to follow the prescribed post-surgical or post-treatment exercise and rest prescriptions of your medical professional.

If ever in doubt, ask your doctor or physiotherapist.

Patient, Appropriate Loading

Step 2 is the development of patient and appropriate loading. This should progress through the basic systems that any training program should develop along:

- ✓ Early focus on holds and basic movements to strengthen weak positions
- ✓ Practicing very light, control-based movements for stability and strength
- ✓ Adding light loading to major movements and maintaining secondary “rehab” exercise
- ✓ Adding serious load to support direct tendon remodelling and returning to normal exercise
- ✓ Using joint-conscious strength training to build functional surplus and strengthen the joint
- ✓ Developing stiffness and reactivity in the muscles and tendons around the joint with deliberate, controlled plyometrics and change-of-direction exercise

This process takes you from dysfunction to normal function, to improved function. The idea is that this continuum will take you from injury to health to performance. This is always the progression and the only thing you need to figure out is where you are on this continuum and what comes next.

Effective strength training should be a natural extension of the rehabilitation process – the development of strength, stability, and control in and around the joint are always top priority. The improvement of muscular strength and control around a joint are major factors in re-injury, so getting stronger in a joint-conscious way is key to preventing re-injury and developing long-term joint health.

Workouts in this guide will focus on this development, and offer progressively more demanding and more-effective strength-building exercise. As ever, it's important to adjust workouts to whatever is pain-free and effective for you. Discomfort will be a staple of getting stronger, but genuine joint pain should be avoided whenever possible.

Rehabilitating the Stability and Coordination of the Joint

The development of stability, co-ordination, and movement in a joint are essential after injury. With a severe enough injury, it could be a complete re-education process in the way that a joint should move – and how you consciously control it.

The development of joint stability is a parallel development with strength. **Strength is only well-expressed in joints that have good stability**, according to scholarly research. Equally, strong muscles with poor control simply don't have the same benefits in preventing re-injury as those that have been trained to deliberately build conscious control and movement quality during rehabilitation.

There are a few movement, control, and co-ordination factors that should be kept in mind:

- **Range of motion:** in joint rebuilding, adding range is more important than adding load – range already adds more work, helps muscles develop, rebuilds connective tissues, and focuses on conscious control.
- **Repetition:** the addition of repetitions and volume (total weight-moved across all reps) is an important way to avoid pain while rebuilding tendon strength and movement control
- **Pauses:** holding important, at-risk, or weak positions helps to preferentially strengthen them and develop your overall joint strength – you're only as strong as your weakest link.
- **Mobility:** strength in extreme ranges makes them less at-risk, and helps you build full-range control in the joint, a great way to maintain movement freedom and real-world joint health.
- **Complexity:** adding more complexity to movement over time is important for rehabilitating your control over joints and preparing them for real-life scenarios
- **Dynamism:** start with more-static movements (holds), and add dynamism over time in the form of full-range exercise, and then (when returned to normal health) add plyometric exercises to further protect the joint.

The **movement focuses** of your training should be at a priority. Regular exercise and workouts to rebuild joints will develop the structure itself, almost independently of the way you perform. What's important is to make sure that you take the time to move properly during this structural rehabilitation work – this ensures the best results and most consistent recovery process.

The development of joint strength and preparation along this progression is a simple way to consider all the most important factors. They may seem bewildering at first, but these are all common sense – you should start with simple, light, rehabilitating exercises and progress to heavy, complex, or dynamic movement. **The important part is the humility to start with an honest eye to where you are right now, and not rush the process because you want to be healthy sooner.**

Effective Management of Volume to Produce Remodelling/Strengthening

One of the most common problems after injury is the presumption that you're going to be able to use your pre-injury numbers or capabilities afterwards. This is a common misgiving that can lead you to disappointment and greater risk of reinjury.

It's important to leave old numbers (e.g., your best set of squats) aside and work to recover first and foremost. **Your muscular strength can be rebuilt quickly, but it's not the priority when rebuilding joints after injury** – and you should “put down” all old goals and redefine them in light of your new timeframe and most-pressing problems or challenges.

There's no benefit to worrying about what you can lift if you can't perform everyday tasks pain-free, for example. **There is plenty of time for setting new personal bests in good time**, but what matters most is managing volume and recovery to rebuild joints and strengthen neglected muscles.

Be Considerate: You Can't Feel Your Joints

After a joint injury – even when you're pain-free – your muscles and joints will likely have a reduced ability to handle *volume* (the total tonnage of load placed on them during exercise).

They will get tired faster and will be more easily degraded or over-trained by the things you do. This is an inevitable result of:

1. Long periods of lower loading and activity during the injury itself
2. The structural damage that came along with injury

The result is that your tissues are more susceptible to fatigue, have a lower “work capacity”, and may not recover from as much loading as they used to. Keep this in mind when rebuilding after a joint injury. It is useful to do **slightly less than you absolutely could**.

Your body will make positive changes even if you're not pushing yourself to the limit. You can make strength, muscle, and tendon improvements without leaving the gym feeling like you've emptied the tank and have nothing left.

How Much Is Too Much? Volume Management

Volume management is even more important than things like exercise performance for re-injury risk and it can't be overlooked. Be sure to track the workouts you're using – including the weights and reps – and progress them slowly.

Keeping volume manageable is one of the single most important ways to make sure your joint rebuilding workouts are actually working. Remember that **you can't feel your connective tissues** so you may not feel the quality and benefits of the workouts you're doing, but they're still supporting the development of the tissues underneath.

It's also important to make sure that the other side of this training and recovery is crucially important for joint rebuilding.



Part 2 – Joint Rebuilding Workouts

What Makes a Great Joint Rebuilding Workout?

A joint workout should be a practice in the development of deliberate movement practice in smart exercises. Control is the focus of these exercises, then loading, and then speed and power afterwards.

Many of these workouts progress from stretching to movement to loaded-stretching and stability development. After this, as your joints are rehabilitated to normal function, the main focus will shift towards strength. This is about building surplus and preparing for the loading of everyday life.



All exercises should be practised to the full, comfortable pain-free range you have available. This makes them a little harder rep-to-rep, but also offers the best results in terms of strength, flexibility, and control.

By following these basic principles, you'll be able to regulate your own workout and get the best value out of this guide. You'll also be able to tweak workouts using your favourite movements, adjusting for your own strength, or developing workouts that feel the most effective on the fly.

How to Get Joint Rebuilding Workouts

Wrists



The wrists are a complex joint that includes a wide range of different movement possibilities. These workouts will be relatively light and simple because the main way to rebuild wrists after injury is **patient and consistent loading** – even more than other joints.

These workouts progress from stretching and simple movement towards earnest strength-building. Later, we introduce more advanced exercise and instability as a way to keep those wrists strong and healthy.

Basic Wrist Stretching and Movement

This workout is a great way to start rebuilding movement and flexibility in the wrists after injury. They take a while to improve, so consider repeating every 1-2 days.

Perform 6-7 rounds:

- ❖ **Wall Stretch** – simply place your hands supinated on the wall and move your body around to ‘find’ the stretch. Hold for a little while, advance the position, and hold again. **Aim for 20 seconds each.**
- ❖ **Underhand Wrist Stretch** – Supinate your hands, this time on the floor. Extend and round your upper back to ‘find’ and move through the stretch. **Work for 40 seconds.**

- ❖ **Wrist Circles** – Clasp your hands together and slowly move them in as large a circular motion as you comfortably can. **Perform for 20 seconds** and then change directions for another 20 seconds.
- ❖ **Can (or Dumbbell) Rotations** – Taking a can or light dumbbell in your hand, keep your elbow at 90 degrees and slowly rotate the wrist for **10 reps in each direction**.



Progressing Wrist Movements

This is just a slight progression on the loading of the wrists and is a good way to start building back more deliberate control.

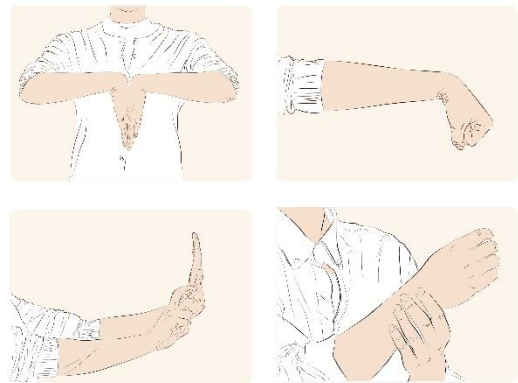
Perform 3-5 rounds:

- ❖ **Underhand Wrist Stretch** - Supinate your hands, this time on the floor. Extend and round your upper back to 'find' and move through the stretch. Work for **40 seconds**.
- ❖ **Wrist Circles** – Clasp your hands together and slowly move them in as large a circular motion as you comfortably can. Perform for **20 seconds** and then change directions for **another 20 seconds**.
- ❖ **Wall Wrist Raise** – Placing your hands high on the wall, move your body weight into them. Use your wrists to gently raise yourself away from the wall. Make this exercise easier by moving your weight towards your heels and off the wrists/hands. Perform **20 reps** at a light challenge/resistance.

- ❖ **Can (or Dumbbell) Rotations** – Taking a can or light dumbbell in your hand, keep your elbow at 90 degrees and slowly rotate the wrist for **10 reps** in each direction.
- ❖ **Stick Rotations** – Take a dowel rod or other long stick in hand with plenty of space. Keeping a firm grip and 90-degree elbow position, rotate the stick as far as possible in each direction in turn, pausing at the end of your range and trying to exaggerate the movement. **10 reps in each direction.**

Strengthening the Wrist – Basics

This workout begins to develop strength, as the wrists should now be healthy and pain-free. Control and exaggerating pain-free ranges of motion is the goal, as the muscles and connective tissues adapt to spending more time under load and become stronger.



Perform 3-5 rounds:

- ❖ **Wrist Circles** – Clasp your hands together and slowly move them in as large a circular motion as you comfortably can. **Perform for 20 seconds** and then change directions for another 20 seconds.
- ❖ **Wall Wrist Raise (+)** – Placing your hands at chest height on the wall, move your body weight into them. Use your wrists to gently raise yourself away from the wall. Make this exercise easier by moving your weight towards your heels and off the wrists/hands. **Perform 20 reps** at a light-moderate challenge/resistance.

- ❖ **Can (or Dumbbell) Rotations** – Taking a can or light dumbbell in your hand, keep your elbow at 90 degrees and slowly rotate the wrist for **10 reps in each direction**.
- ❖ **3-Grip Can Wrist Curl** – Taking a can or light dumbbell in hand, keep your arm at 90 degrees. Perform **10 repetitions of supinated curls**, followed by **10 repetitions of pronated curls**, and then 10 repetitions of neutral-grip curls. Try to exaggerate and pause the “top” position.
- ❖ **Kneeling Fist Push-Up** – Maintain a clenched fist and set up to perform a push up from the kneeling position. Perform a push-up with your fists on the floor, focusing on maintaining a tight “grip” and keeping the wrists straight as you move through the push-up for **10 repetitions**.

Strengthening the Wrist – Adding Complexity

By adding complexity, you start to develop the control and real-life resilience of the joint. By combining strength and asymmetrical loading, you’re also forced to control and stabilise the joint – key to long-term health.

Perform 5-7 rounds:

- ❖ **Can (or Dumbbell) Rotations** – Taking a can or light dumbbell in your hand, keep your elbow at 90 degrees and slowly rotate the wrist for **10 reps in each direction**.
- ❖ **Incline Offset Push-Up** – Take a standard push-up grip on a raised surface like a box, bench, or even kitchen counter. Perform a push-up favouring one side at a time,

lowering yourself towards one hand. Reverse the movement and press the surface away until you return to the start position. **Perform 8 repetitions per side.**

❖ **Shoulder Taps** – Take a plank position with feet at hip-width and locked arms. From this position, maintain your balance while taking one hand off the floor and touching the opposite shoulder – and then repeat on the opposite side. Perform **10 shoulder touches per side.**

❖ **3-Grip Can Wrist Curl** – Taking a can or light dumbbell in hand, keep your arm at 90 degrees. Perform **10 repetitions of supinated curls**, followed by **10 repetitions of pronated curls**, and then 10 repetitions of neutral-grip curls. Try to exaggerate and pause the “top” position.

❖ **Fist Push-Up** – Maintain a clenched fist and set up to perform a push up from the standard, plank position. Perform a push-up with your fists on the floor, focusing on maintaining a tight “grip” and keeping the wrists straight as you move through the push-up for **10 repetitions.**



Elbows

The elbows are a hard-working joint that may become injured through overuse, traumatic events, or simply inflammatory conditions. Rebuilding the elbow after joint injury or pain has to focus on both sides – including the triceps and biceps, but also the extension and flexion of the wrist (see above for more ideas).



There is a longer set of progressive loading workouts for rebuilding the elbow – compared to the wrist itself – and it follows the same movement-strength-power development arc that all workouts do. This makes the elbow a joint with excellent long-term strengthening and resilience options.

There are many workouts for elbows but it's important to remember that they depend on mobility and control in the wrist and shoulder. When

rebuilding your elbows, make sure to practice some of the workouts dedicated to shoulder and wrist health in this guide.

Movement in the Elbow

This is just about getting the elbows moving through their full range and trying to smooth out motion. It's a simple but important step – and this workout can be a very effective elbow warm-up in future as strength returns and demands become more intense.

Perform 5-10 rounds:

- ❖ **Wrist Circles** – Clasp your hands together and slowly move them in as large a circular motion as you comfortably can. **Perform for 20 seconds and then change directions for another 20 seconds.**
- ❖ **Elbow Circles** – With your arms out to your sides, keep your wrist joint straight and draw circles using movement from your elbows. Start small and expand the size of the circle to the maximum possible, slowly, and then slowly reduce the size after you've reached the maximum. **Perform 20 seconds in each direction – and then 20 seconds in the opposite direction.**

- ❖ **Shoulder Circles** – With your arms out to your sides, keep your wrist and elbow joint straight and draw circles using movement from your shoulders. Start small and expand the size of the circle to the maximum possible, slowly, and then slowly reduce the size after you've reached the maximum. **Perform 20 seconds in each direction – and then 20 seconds in the opposite direction.**



- ❖ **Overhead Tricep Stretch** – Reach one arm overhead and fully bend your elbow, placing the hand behind your back. Reach up with your free hand to cup the elbow, and gently pull it towards your opposite shoulder, until you feel a stretch in your shoulder and tricep. **Move through this stretch for 20 seconds, before repeating for 20 seconds on the other side.**
- ❖ **Swimmer Tricep Extension** – Lay flat on the floor, face down, with your shoulders pulled back off the floor. From this position, bring your elbows back as far as you can without arching your back. Extend your elbows from this position, holding at the top for a few moments – **perform 20 repetitions.**

Loaded Movement

These movements slightly develop on the previous 'workout' and are all about building control in the extra ranges that we previously moved through. The focus is, of course, on control and pain-free movement, especially around the elbow in the shoulder joint, for example.

Perform 5-10 rounds:

- ❖ **Elbow Circles** – With your arms out to your sides, keep your wrist joint straight and draw circles using movement from your elbows. Start small and expand the size of the circle to the maximum possible, slowly, and then slowly reduce the size after you've reached the maximum. **Perform 20 seconds in each direction – and then 20 seconds in the opposite direction.**



- ❖ **Swimmer Tricep Extension** – Lay flat on the floor, face down, with your shoulders pulled back off the floor. From this position, bring your elbows back as far as you can without arching your back. Extend your elbows from this position, holding at the top for a few moments – **perform 20 repetitions.**

- ❖ **Swimmer Scaption** – Lay flat on the floor, face down, with your arms straight out on the floor in front of you. From this position, keeping your core tight, raise your hands as far off the floor as possible and – keeping them high – slowly move your hands down to touch your thighs, drawing the biggest possible circle before reversing the movement. **Repeat for 10 repetitions in total.**

- ❖ **Can (or Dumbbell) Circles** – Perform elbow circles as above, while holding a can or light dumbbell in hand and actively squeezing it. **Perform 20 slow repetitions in each direction and then 20 in the opposite direction.**

- ❖ **Can (or Dumbbell) Lying Tricep Extension** – Lay flat on the floor, on your back, with a can or dumbbell held firmly in each hand. Start with your arms directly in front of your shoulders on straight arms – slowly bending the elbows to lower the cans

towards your shoulders, and then reversing this movement to extend the arm. **Perform 20 slow and controlled repetitions.**

Adding Complexity

This workout comes in two parts, and both are focused on developing more challenging movements and developing familiarity with the proper movement of the elbow. This involves its place between the shoulder and wrist, but also its isolated movement – which is key to control and strength alike.

This even involves using real strengthening exercises like the hand-release push-up, which helps control the use of the shoulders and elbow together as a single unit.



10 Rounds:

- ❖ **Swimmer Tricep Extension** – Lay flat on the floor, face down, with your shoulders pulled back off the floor. From this position, bring your elbows back as far as you can without arching your back. Extend your elbows from this position, holding at the top for a few moments – **perform 20 repetitions.**
- ❖ **Swimmer Scaption** – Lay flat on the floor, face down, with your arms straight out on the floor in front of you. From this position, keeping your core tight, raise your hands as far off the floor as possible and – keeping them high – slowly move your hands down to touch your thighs, drawing the biggest possible circle before reversing the movement. **Repeat for 10 repetitions in total.**

As many rounds as possible in 5 minutes:

- ❖ **Hand-Release Push-Up** – Take a standard push-up position with arms extended and your core/hips active. From this position, lower yourself to the floor. With your chest touching the floor, retract your shoulder blades to pull your hands as far off the floor as possible. Return the hands to the floor and perform a standard push-up to complete one rep. **Perform as many clean, slow, controlled repetitions as possible.**



Note

If you're still experiencing pain, discomfort, or weakness, try performing these push-ups from a kneeling position.

Strength and Elbow-Shoulder Control

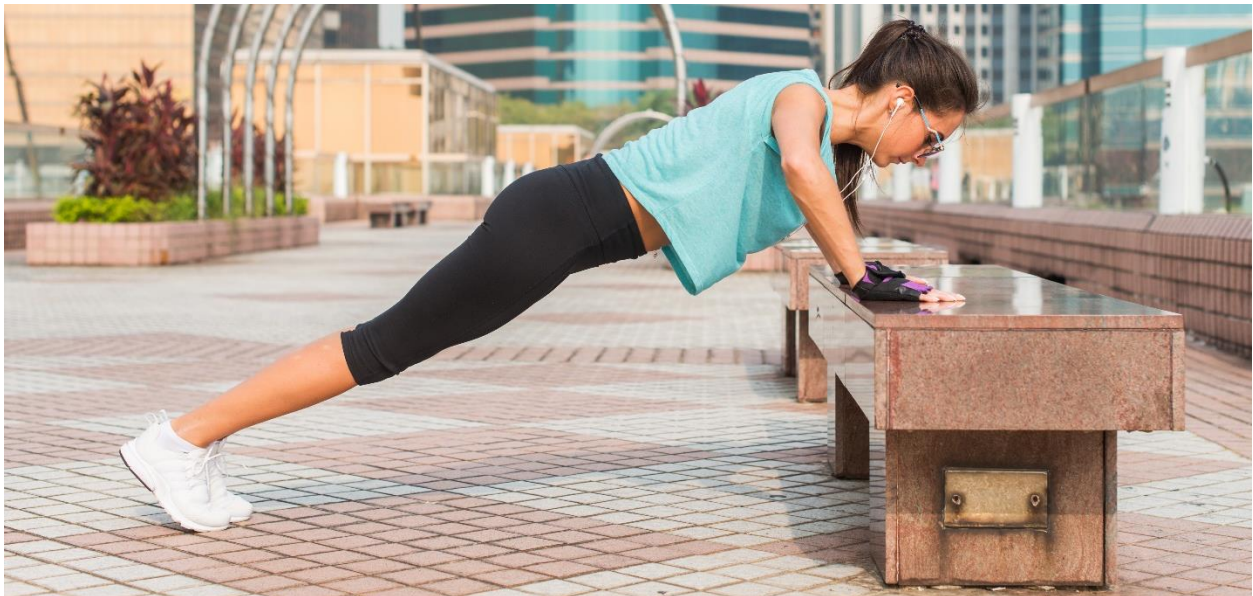
This workout is about developing control in the elbows and shoulders, where the most instability comes from. Many people suffer elbow injuries due to poor control, mobility, and strength around the shoulder joint.

This workout helps you prevent these “upstream” problems and build long-lasting strength and resilience.

Perform every 2 minutes for 6 rounds:

❖ **Swimmer Scaaption** – Lay flat on the floor, face down, with your arms straight out on the floor in front of you. From this position, keeping your core tight, raise your hands as far off the floor as possible and – keeping them high – slowly move your hands down to touch your thighs, drawing the biggest possible circle before reversing the movement. **Repeat for 10 repetitions in total.**

❖ **Incline Offset Push-Up** – Take a standard push-up grip on a raised surface like a box, bench, or even kitchen counter. Perform a push-up favouring one side at a time, lowering yourself towards one hand. Reverse the movement and press the surface away until you return to the start position. **Perform 8 repetitions per side.**



❖ **Narrow Grip Push-Up** – Keeping your hands closer than shoulder width near the top of your clavicle, take a kneeling position. Perform push-ups from this position, focusing on keeping your shoulder blades back and down and moving from the elbows. **Perform 8-12 repetitions.**

Strengthening Circuits

This workout expands on the basic strength of previous workouts with an increased pace and focus on building strength in the muscles around the elbow, but also the connective tissues of the joint itself.

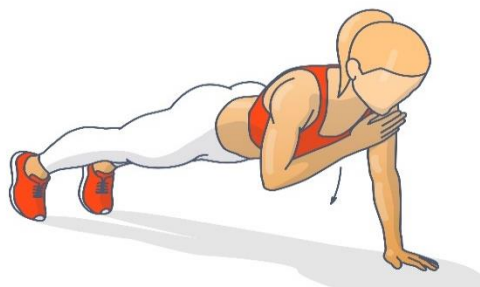
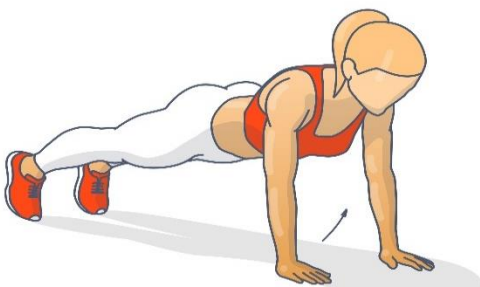
It involves plenty of basic bodyweight loading, but also at high enough repetitions to flush the joint with nutrient-rich blood and promote recovery.

Every Minute on the Minute – To Failure:

- ❖ **Hand-Release Push-Up** – Take a standard push-up position with arms extended and your core/hips active. From this position, lower yourself to the floor. With your chest touching the floor, retract your shoulder blades to pull your hands as far off the floor as possible. Return the hands to the floor and perform a standard push-up to complete one rep. **Perform 6 repetitions.**

3 rounds, own pace:

- ❖ **Plank Shoulder Touch** – Take a plank position with a tight core and low, active hips. From this position, touch your opposite shoulder with the opposite hand, keeping the core and hips stable. **Perform 10 repetitions per side.**



- ❖ **Sideways Plank Walk** – Take a plank position with a tight core and low, active hips. From this position, begin moving sideways, trying to keep your core stable throughout. Bend your knees to reduce the difficulty, if needed. **Perform 10 seconds of walking in each direction.**

5 rounds, higher pace:

- ❖ **Scap Push-Up** – Take a standard push-up position with a tight core and low, active hips. From this position, keep your arms locked and lower yourself as low as possible. Reverse this movement and push yourself as far as possible from the floor, moving from the shoulder blades. **Perform 10 repetitions.**
- ❖ **Hand-Release Push-Up** – Take a standard push-up position with arms extended and your core/hips active. From this position, lower yourself to the floor. With your chest touching the floor, retract your shoulder blades to pull your hands as far off the floor as possible. Return the hands to the floor and perform a standard push-up to complete one rep. **Perform 8 repetitions.**

Strength-In-Range

This is a simple workout that develops strength with long movements and exaggerated ranges. It can be used as a “lighter” workout between heavier workouts but still offers an effective option for building stronger and healthier elbows.

Loading should be light, but the actual performance of these exercises can be made challenging with a sufficient focus on slowing down, pausing in the “stretched” positions, and moving only the elbow during the tricep extension.

10 rounds:

- ❖ **Hand-Release Push-Up** – Take a standard push-up position with arms extended and your core/hips active. From this position, lower yourself to the floor. With your chest touching the floor, retract your shoulder blades to pull your hands as far off the floor as possible. Return the hands to the floor and perform a standard push-up to complete one rep. **Perform as many repetitions as possible.**

- ❖ **Can YTW** – Taking a can, weight plate, or light dumbbell in hand, lay face-down on a raised surface (like an inclined weight bench). Raise your arms overhead and retract the shoulder blades to form a “Y” shape, then sideways on straight arms to produce a “T” shape, and finally sideways on bent arms with a rotation to form a “W”. **Perform 10 repetitions of each movement in order.**

- ❖ **Overhead Tricep Extension** – Taking a can or light dumbbell in hand, take a seat with one arm extended overhead. Keeping a tight grip on the can or weight, lower it behind your body until you feel a stretch between the elbow and shoulder. Move slowly to keep the elbow still and reverse the movement, using the tricep to lock the elbow out. **Perform 10 repetitions per arm.**



Strength and Stability

This workout is more intensive than the previous one, and is built around putting the elbow in dynamic situations. This involves more lateral strengthening with plank sideways walks, as well as the added high-speed movement of the explosive push-up from incline.

These are real-world applications of strength and stability that makes rebuilding joints a long-term health benefit, and prepares them for everyday tasks in the real world.

EMOM, 3 minutes:

- ❖ **Hand-Release Push-Up** – Take a standard push-up position with arms extended and your core/hips active. From this position, lower yourself to the floor. With your chest touching the floor, retract your shoulder blades to pull your hands as far off the floor as possible. Return the hands to the floor and perform a standard push-up to complete one rep. **Perform 5 repetitions.**

- ❖ **Swimmer Scaption** – Lay flat on the floor, face down, with your arms straight out on the floor in front of you. From this position, keeping your core tight, raise your hands as far off the floor as possible and – keeping them high – slowly move your hands down to touch your thighs, drawing the biggest possible circle before reversing the movement. **Repeat for 6 repetitions in total.**

4 rounds:

- ❖ **Incline Explosive Push-Up** – Take a normal push-up position but with your hands on a stable raised surface like a kitchen surface or similar. From this position, perform a normal push-up but with speed and force to give yourself “air time” off of the surface. **Perform 5 repetitions** focusing on speed and power – and a soft landing.

- ❖ **Scap Push-Up** – Take a standard push-up position with a tight core and low, active hips. From this position, keep your arms locked and lower yourself as low as possible. Reverse this movement and push yourself as far as possible from the floor, moving from the shoulder blades. **Perform 10 repetitions.**

4 rounds:

- ❖ **Sideways Plank Walk** – Take a plank position with a tight core and low, active hips. From this position, begin moving sideways, trying to keep your core stable throughout. Bend your knees to reduce the difficulty, if needed. **Perform 10 seconds of walking in each direction.**

- ❖ **Incline Offset Push-Up** – Take a standard push-up grip on a raised surface like a box, bench, or even kitchen counter. Perform a push-up favouring one side at a time, lowering yourself towards one hand. Reverse the movement and press the surface away until you return to the start position. **Perform 8 repetitions per side.**



Final Elbow workout

This is the final workout for the elbows and offers a comprehensive blend of everything that you've practiced in earlier elbow workouts. It involves proper warm-ups, strength-control exercises, and explosive power work to improve your long-term elbow health and resilience.

It will work you to "failure" on two separate blocks. This should be a vague sense of failure as 'can't do another rep well', rather than complete muscular failure. Use your own judgment on what you can do – failing reps is still a bad thing.

5 rounds, own pace:

- ❖ **Swimmer Tricep Extension** – Lay flat on the floor, face down, with your shoulders pulled back off the floor. From this position, bring your elbows back as far as you can without arching your back. Extend your elbows from this position, holding at the top for a few moments – **perform 20 repetitions.**
- ❖ **Plank Shoulder Touch** – Take a plank position with a tight core and low, active hips. From this position, touch your opposite shoulder with the opposite hand, keeping the core and hips stable. **Perform 10 repetitions per side.**
- ❖ **Swimmer Scaption** – Lay flat on the floor, face down, with your arms straight out on the floor in front of you. From this position, keeping your core tight, raise your hands as far off the floor as possible and – keeping them high – slowly move your hands down to touch your thighs, drawing the biggest possible circle before reversing the movement. **Repeat for 6 repetitions in total.**

As many rounds as possible:

- ❖ **Clapping Push-Up** – Take a normal push-up position but with your hands on a stable raised surface like a kitchen surface or similar. From this position, perform a normal push-up but with speed and force to give yourself “air time” off of the surface and clapping mid-air. Incline as needed to complete **5 repetitions - with a soft landing.**

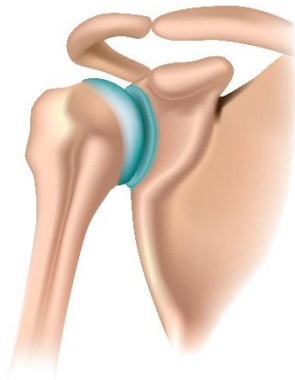


As many rounds as possible:

- ❖ **Narrow Grip Push-Up** – Keeping your hands closer than shoulder width near the top of your clavicle, take a kneeling position. Perform push-ups from this position, focusing on keeping your shoulder blades back and down and moving from the elbows. **Perform 10-12 repetitions.**
- ❖ **Incline Offset Push-Up** – Take a standard push-up grip on a raised surface like a box, bench, or even kitchen counter. Perform a push-up favouring one side at a time, lowering yourself towards one hand. Reverse the movement and press the surface away until you return to the start position. **Perform 8 repetitions per side.**

Shoulders

Basic Shoulder Movement



Shoulders have the longest range of any joint in the body and include a complex balance of front and rear musculature. This means that proper movement should be controlled, regular, and through the largest range possible. Familiarity with the shoulder's huge range helps build control and strength.

This workout is simply about performing maximal (pain-free) range of movement and spending time in places the shoulder needs to be comfortable!

Perform 5-7 rounds, own pace:

- ❖ **Shoulder Dislocate** – Take a dowel rod, towel, or other item in hand that allows you keep a constant grip. Keeping this grip, keep your core and hips tight, raise the rod

overhead and slowly rotate it around as far as possible – or until it touches your lower back. Slowly reverse the motion. You can move your hands closer over time to improve the stretch – but make sure to progress patiently with an active upper back and core. **Repeat for 40 seconds.**

- ❖ **Shoulder Circles** – With your arms out to your sides, keep your wrist and elbow joint straight and draw circles using movement from your shoulders. Start small and expand the size of the circle to the maximum possible, slowly, and then slowly reduce the size after you’ve reached the maximum. **Perform 20 seconds in each direction – and then 20 seconds in the opposite direction.**
- ❖ **Can YTW** – Taking a can, weight plate, or light dumbbell in hand, lay face-down on a raised surface (like an inclined weight bench). Raise your arms overhead and retract the shoulder blades to form a “Y” shape, then sideways on straight arms to produce a “T” shape, and finally sideways on bent arms with a rotation to form a “W”. **Perform 10 repetitions of each movement in order.**
- ❖ **Swimmer Tricep Extension** – Lay flat on the floor, face down, with your shoulders pulled back off the floor. From this position, bring your elbows back as far as you can without arching your back. Extend your elbows from this position, holding at the top for a few moments – **perform 20 repetitions.**

Movement and Control

This workout focuses on a similar set of priorities to the previous one, but with more focus on the development of strength and control in the large range of the shoulders. Loads remain low, but more time spent in important positions helps introduce long-term resilience training.

Perform 5-10 rounds, own pace:

❖ **Swimmer Scaption** – Lay flat on the floor, face down, with your arms straight out on the floor in front of you. From this position, keeping your core tight, raise your hands as far off the floor as possible and – keeping them high – slowly move your hands down to touch your thighs, drawing the biggest possible circle before reversing the movement. **Repeat for 10 repetitions in total.**

❖ **Swimmer Tricep Extension** – Lay flat on the floor, face down, with your shoulders pulled back off the floor. From this position, bring your elbows back as far as you can without arching your back. Extend your elbows from this position, holding at the top for a few moments – **perform 20 repetitions.**

❖ **Can (or Dumbbell) Circles** – Perform shoulder circles as above, while holding a can or light dumbbell in hand and actively squeezing it. **Perform 20 slow repetitions in each direction and then 20 in the opposite direction.**

❖ **Can YTW** – Taking a can, weight plate, or light dumbbell in hand, lay face-down on a raised surface (like an inclined weight bench). Raise your arms overhead and retract the shoulder blades to form a “Y” shape, then sideways on straight arms to produce a “T” shape, and finally sideways on bent arms with a rotation to form a “W”. **Perform 10 repetitions of each movement in order.**



❖ **Can Reverse Flye + Hold** – Taking a can, weight plate or light dumbbell in hand, bend at the hips and keep the back flat until you’re almost parallel with the floor. From this position, keep the chest big and move the weights backwards as far as possible while keeping your arms straight and squeezing the shoulder blades down and together – holding at the top for 2 seconds. **Perform 10 repetitions.**

Stretch and Strengthen

This workout begins to blend stretching and strengthening as two tools in service of one end-goal: better control in the shoulders. This means a combination of proper movement practice and effective stretching will provide better overall control in those all-important weaker ranges.

Perform 3 rounds:

- ❖ **Preacher Stretch** – Kneel on the floor and place your hands out in front of you, flat to the floor with straight arms. Sit back and down into the kneeling position, moving from side to side and “through” your arms until you find the stretch in the lats and shoulders. **Move for 15 seconds in a neutral position, and then 15 seconds on each side.**



- ❖ **Swimmer Scaption** – Lay flat on the floor, face down, with your arms straight out on the floor in front of you. From this position, keeping your core tight, raise your hands as far off the floor as possible and – keeping them high – slowly move your hands down to touch your thighs, drawing the biggest possible circle before reversing the movement. **Repeat for 10 repetitions in total.**
- ❖ **Weighted Dislocate** – As shoulder dislocates, but with a small weight plate added to the rod or towel. Perform very slowly and carefully – and load very lightly. **Perform 6 slow, controlled repetitions.**

Perform 5-8 rounds:

- ❖ **(Long Pause) Hand-Release Push-Up** – Take a standard push-up position with arms extended and your core/hips active. From this position, lower yourself to the floor. With your chest touching the floor, retract your shoulder blades to pull your hands as far off the floor as possible for 5 seconds. Return the hands to the floor and perform a standard push-up to complete one rep. **Perform 5 repetitions.**
- ❖ **Wall Slide** – Take a foam roller or sliders and place them between your elbows and the wall. From this position, keep your core tight and try to slide your elbows up “through” the wall, keeping constant pressure and trying to get your elbows as high and forward as possible. **Perform 10 repetitions.**

Functional Strength Exercise

These exercises begin to blur the line between stretching and strength training. Good: this is the combination that is most effective for returning a shoulder to the point where it can accept regular load and begins to move from ‘weak and injured’ to ‘building strength again’.

This is the difference between solving a problem and building long-term resilience!

Perform 5 rounds:

- ❖ **Can (or Dumbbell) Circles** – Perform shoulder circles as above, while holding a can or light dumbbell in hand and actively squeezing it. **Perform 20 slow repetitions in each direction and then 20 in the opposite direction.**
- ❖ **Wall Slide** – Take a foam roller or sliders and place them between your elbows and the wall. From this position, keep your core tight and try to slide your elbows up “through”

the wall, keeping constant pressure and trying to get your elbows as high and forward as possible. **Perform 10 repetitions.**

- ❖ **Weighted Dislocate** – As shoulder dislocates, but with a small weight plate added to the rod or towel. Perform very slowly and carefully – and load very lightly. **Perform 6 slow, controlled repetitions.**

- ❖ **Band Pull-Apart** – Take a resistance band and, keeping the core tight and static, pull the band apart by retracting the shoulder blades. Keep your arms straight or slightly bent through the movement, focusing on opening up the chest and squeezing the shoulder blades back, down, and together. **Perform 10 repetitions from a neutral position, 10 from a high angle, and 10 from a low angle.**



Perform 5 rounds:

- ❖ **Lu Raise** – Taking a can, weight plate, or light dumbbell, keep a tight core and slight bend at the hip. Slowly raise the plates over your head, trying to keep the weight as far backwards as possible, drawing the largest circle possible with your hands – and holding overhead for a brief moment. **Perform 10 repetitions in a seated position and then 10 while standing.**
- ❖ **Can YTW** – Taking a can, weight plate, or light dumbbell in hand, lay face-down on a raised surface (like an inclined weight bench). Raise your arms overhead and retract the shoulder blades to form a “Y” shape, then sideways on straight arms to produce a “T”

shape, and finally sideways on bent arms with a rotation to form a “W”. **Perform 10 repetitions of each movement in order.**

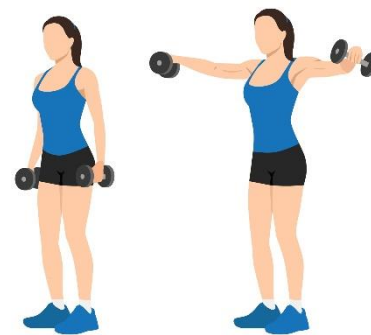
- ❖ **Swimmer Tricep Extension (+)** – Lay flat on the floor, face down, with your shoulders pulled back off the floor and small weights in your hands. From this position, bring your elbows back as far as you can without arching your back. Extend your elbows from this position, holding at the top for a few moments – **perform 20 repetitions.**

Strengthening and Work Capacity

This workout is longer and less restful than prior workouts, adding a focus on the work capacity and stabilizing roles of the muscles around the shoulder. The lack of rest maintains a better blood flow to the joints in particular, as well as building muscular endurance in the muscles to keep them working to stabilize the joint in future.

Perform 10 rounds, minimal rest:

- ❖ **Weighted Dislocate** – As shoulder dislocates, but with a small weight plate added to the rod or towel. Perform very slowly and carefully – and load very lightly. **Perform 6 slow, controlled repetitions.**
- ❖ **Lu Raise** – Taking a can, weight plate, or light dumbbell, keep a tight core and slight bend at the hip. Slowly raise the plates over your head, trying to keep the weight as far backwards as possible, drawing the largest circle possible with your hands – and holding overhead for a brief moment. **Perform 10 repetitions in a seated position and then 10 while standing.**



- ❖ **Reverse Flye + Hold** – Taking a can, weight plate or light dumbbell in hand, bend at the hips and keep the back flat until you're almost parallel with the floor. From this position, keep the chest big and move the weights backwards as far as possible while keeping your arms straight and squeezing the shoulder blades down and together – holding at the top for 2 seconds. **Perform 10 repetitions.**
- ❖ **Incline Offset Push-Up** – Take a standard push-up grip on a raised surface like a box, bench, or even kitchen counter. Perform a push-up favouring one side at a time, lowering yourself towards one hand. Reverse the movement and press the surface away until you return to the start position. **Perform 8 repetitions per side.**

Shoulder Strength and Power

This workout is no longer about basic work capacity or function – it's about a sustainable approach to shoulder strengthening. It simply warms up your shoulders with proper movement cueing and then puts them to work in explosive and higher-load scenarios that will prepare your shoulders for real life.

Perform 3 rounds, own pace:

- ❖ **Swimmer Tricep Extension** – Lay flat on the floor, face down, with your shoulders pulled back off the floor. From this position, bring your elbows back as far as you can without arching your back. Extend your elbows from this position, holding at the top for a few moments – **perform 20 repetitions.**
- ❖ **Plank Shoulder Touch** – Take a plank position with a tight core and low, active hips. From this position, touch your opposite shoulder with the opposite hand, keeping the core and hips stable. **Perform 10 repetitions per side.**

- ❖ **Swimmer Scaption** – Lay flat on the floor, face down, with your arms straight out on the floor in front of you. From this position, keeping your core tight, raise your hands as far off the floor as possible and – keeping them high – slowly move your hands down to touch your thighs, drawing the biggest possible circle before reversing the movement. **Repeat for 6 repetitions in total.**

Perform as many rounds as possible:

- ❖ **Clapping Push-Up** – Take a normal push-up position but with your hands on a stable raised surface like a kitchen surface or similar. From this position, perform a normal push-up but with speed and force to give yourself “air time” off of the surface and clapping mid-air. Incline as needed to complete **5 repetitions** - with a soft landing.
- ❖ **Wall Slide** – Take a foam roller or sliders and place them between your elbows and the wall. From this position, keep your core tight and try to slide your elbows up “through” the wall, keeping constant pressure and trying to get your elbows as high and forward as possible. **Perform 10 repetitions.**



Perform 5 rounds:

- ❖ **Incline Offset Push-Up** – Take a standard push-up grip on a raised surface like a box, bench, or even kitchen counter. Perform a push-up favouring one side at a time, lowering yourself towards one hand. Reverse the movement and press the surface away until you return to the start position. **Perform 8 repetitions per side.**
- ❖ **Can Reverse Flye + Hold** – Taking a can, weight plate or light dumbbell in hand, bend at the hips and keep the back flat until you’re almost parallel with the floor. From this position, Keep the chest big and move the weights backwards as far as possible while keeping your arms straight and squeezing the shoulder blades down and together – holding at the top for 2 seconds. **Perform 10 repetitions.**

- ❖ **Lu Raise** – Taking a can, weight plate, or light dumbbell, keep a tight core and slight bend at the hip. Slowly raise the plates over your head, trying to keep the weight as far backwards as possible, drawing the largest circle possible with your hands – and holding overhead for a brief moment. **Perform 10 repetitions in a seated position and then 10 while standing.**

Perform 5 rounds, own pace:

- ❖ **Weighted Dislocate** – As shoulder dislocates, but with a small weight plate added to the rod or towel. Perform very slowly and carefully – and load very lightly. **Perform 6 slow, controlled repetitions.**
- ❖ **Wall Slide** – Take a foam roller or sliders and place them between your elbows and the wall. From this position, keep your core tight and try to slide your elbows up “through” the wall, keeping constant pressure and trying to get your elbows as high and forward as possible. **Perform 10 repetitions.**
- ❖ **Can Reverse Flye + Hold** – Taking a can, weight plate or light dumbbell in hand, bend at the hips and keep the back flat until you’re almost parallel with the floor. From this position, Keep the chest big and move the weights backwards as far as possible while keeping your arms straight and squeezing the shoulder blades down and together – holding at the top for 2 seconds. **Perform 10 repetitions.**

Perform 5-10 rounds, own pace:

- ❖ **Clapping Push-Up** – Take a normal push-up position but with your hands on a stable raised surface like a kitchen surface or similar. From this position, perform a normal push-up but with speed and force to give yourself “air time” off of the surface and clapping mid-air. **Incline as needed to complete 5 repetitions - with a soft landing.**

Perform 5 rounds, own pace:

- ❖ **Incline explosive push-up** – Take a normal push-up position but with your hands on a stable raised surface like a kitchen surface or similar. From this position, perform a normal push-up but with speed and force to give yourself “air time” off of the surface. **Perform 5 repetitions focusing on speed and power – and a soft landing.**



- ❖ **(Long Pause) Hand-Release Push-Up** – Take a standard push-up position with arms extended and your core/hips active. From this position, lower yourself to the floor. With your chest touching the floor, retract your shoulder blades to pull your hands as far off the floor as possible for 5 seconds. Return the hands to the floor and perform a standard push-up to complete one rep. **Perform 5 repetitions.**

Perform 10 rounds, minimal rest:

- ❖ **Plank Shoulder Touch** – Take a plank position with a tight core and low, active hips. From this position, touch your opposite shoulder with the opposite hand, keeping the core and hips stable. **Perform 10 repetitions per side.**
- ❖ **Incline Offset Push-Up** – Take a standard push-up grip on a raised surface like a box, bench, or even kitchen counter. Perform a push-up favouring one side at a time, lowering yourself towards one hand. Reverse the movement and press the surface away until you return to the start position. **Perform 8 repetitions per side.**

Spinal Health (Core and Hip-Spine Stabilising Exercises)

The spine is one of the most commonly injured but important series of joints in the body. It's where the most important neural structures travel and it can easily become a source of debilitating joint pain.

Most injuries in the spine that can be repaired and rebuilt are rebuilt through stability, then functional movements with core stability as a major theme, and then re-learning how to land and contact the ground without putting undue impact through the spine.

These workouts will focus on developing spinal stability and strengthening the muscles around this crucial structure. Then, they will focus on challenging your spinal stability while introducing increasingly dynamic movements. Finally, they focus on strengthening your spine in response to impact, but also moving the spine through healthy ranges to build realistic strength and stability.



Basic Core Stability and Control

An inability to control the core can lead to serious spine and hip problems. When rebuilding after an injury in either of these areas, the focus is on keeping the spine safe and making sure that it can rest and sit in the neutral position without discomfort.

Stability is an important precursor to movement, and it's only when you have control over your spine and strength resisting movement that good movement can be built and loaded up. This workout is step one in that journey.

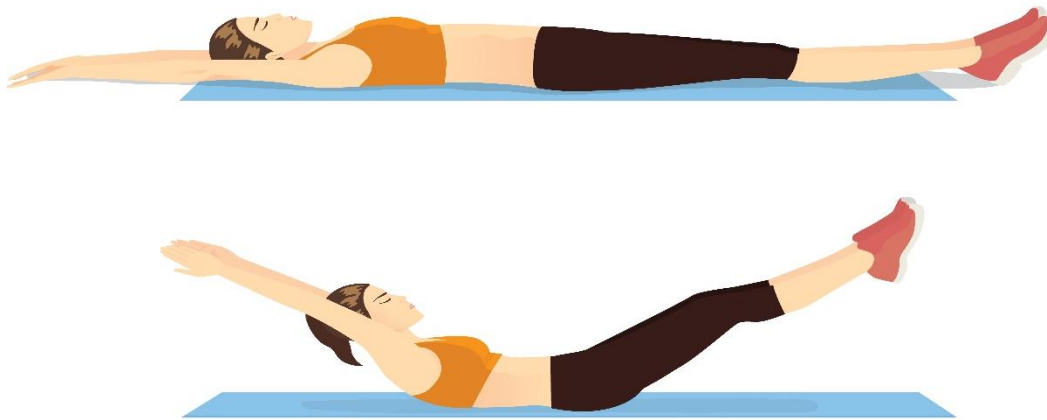
Perform 5-10 rounds, own pace:

❖ **Deadbug** – Lay flat on your back with your lower back pressed into the floor and your core tight. From this position, straighten your arms above your shoulders and tuck your knees until your hip and knee angle are both 90-degrees. From here, extend the opposite arm and leg as far as possible while keeping the core stable and unmoving. Reverse the movement to complete the rep. **Perform 8 reps per side.**

❖ **Bird Dog** – Taking an all-fours position on straight arms and knees, keep your core tight and a straight line between your tailbone and the crown of your head. From this position, raise your opposite arm and leg to completely straight without moving the spine or hips. Slowly press these limbs out and reverse to return to the original position, completing the rep. **Perform 8 reps per side.**



- ❖ **Hollow Hold** – Take an extended position on the floor with the arms overhead and legs straight out. Raise both the feet and hands above the body to create a ‘bowl’ shape. Keep actively pushing your belly button into the floor and actively lengthening your whole body. **Hold this position for 15 seconds.**



- ❖ **Hip Cars (for stability)** – Take an all-fours position as in the Bird Dog, with the arms straight and knees touching the floor. From this position, pull one knee out sideways and externally rotate the hip as far as possible, keeping the rest of the body stable. From the fully rotated-out position, press it down until the hip is neutral and the leg is straight, before reversing the movement. **Perform 8 reps per side.**

- ❖ **Lying Leg Raise** – Lay flat on the floor with the back flat and lower back pressed into the floor. From this position, raise your legs up towards your chest. Straighter legs are harder, while bent knees reduce the difficulty. Raise and lower slowly, focusing on keeping the body above the hips stable. **Perform 12 repetitions.**

Stronger Spinal Stability

This workout expands on the stability focus of the previous level with a more challenging set of exercises and a greater focus on movement. As stability develops, so does the list of things you can do with it.

The exercises here are small advances on the previous workout, but offer a greater challenge and better long-term strength in return.

Perform 6 rounds:

❖ **Straight-Leg Deadbug** – As with the deadbug prior, but using a completely extended leg, similar to in a lying leg raise. Do not let the leg rest on the floor, instead maintaining constant tension on the hip and core muscles. **Perform 8 reps per side.**

❖ **Bird Dog + Hip Car** – as the Bird Dog before, but performing a hip car (as described above) at the end of every repetition. This is one rep total – **perform 5 repetitions per side.**

❖ **8 Point Plank** – Taking a plank

position, lower yourself until your hands, elbows, knees, and toes are all on the floor. Keep your belly button pressed up as high as possible and hips low. From this position, extend the space between your elbows and knees until you feel a very clear challenge on the core muscles. **Hold this position for as long as possible at the longest possible distance.**



Perform 4 rounds:

❖ **Side Plank with Dips** – Take a side plank position by resting one elbow and hand on the floor, elevating the body to keep the head, hips, and feet aligned in all axes. Keeping the core tight, lower your hips to the floor, before reversing the movement. **Perform 10 repetitions per side.**

❖ **Reverse Crunch to Deadbug** – Take the same setup position as a lying leg raise or deadbug, performing a complete lying leg raise, then bringing the knees closer to the face

and curling the back up – off of the floor – into a maximum squeeze of the core. Lower the position into the deadbug position, holding briefly in the end position. **Perform 8 repetitions per side.**

EMOM – 5 minutes:

- ❖ **Foam Roller Knee Tuck** – Lay on the floor in the setup position for a lying leg raise. Take a foam roller in the space between your calves and hamstrings, squeeze it tightly throughout. Keeping tension on the foam roller, tuck your knees into your chest using your core and hip flexors. **Perform 12 repetitions.**

Strengthening the Neutral Spine

This workout is more earnestly about strength. Specifically, it's about muscular strength-endurance, the key to keeping your spine stable even as you work through more range and introduce more dynamic demands.

The goal is to either keep the spine neutral while other body parts move, or to move the spine in small motions like the knee tuck that really focus on squeezing into extreme range and building strength and control there.

Perform 5-10 rounds, minimal rest:

- ❖ **Straight-Leg Deadbug** – As with the deadbug prior, but using a completely extended leg, similar to in a lying leg raise. Do not let the leg rest on the floor, instead maintaining constant tension on the hip and core muscles. **Perform 8 reps per side.**
- ❖ **Bird Dog + Hip Car** – as the Bird Dog before, but performing a hip car (as described above) at the end of every repetition. This is one rep total – **perform 5 repetitions per side.**

- ❖ **L-Sit Hold** – Taking a hanging position or locked out elbows on a set of dip bars, extend your legs directly out in front of you with the hips at a 90-degree angle. This forms an L shape. Hold this position as static and unmoving as possible. **Perform maximum duration holds.**



- ❖ **Supported Single Leg Airplane** – Place your hands on the wall with arms straight and remove one leg from the floor, extending it directly behind yourself. From here, rotate as far “away” from the leg as possible with your hips and torso. Repeat this process in the opposite direction, and focus on getting as much rotation against the leg as possible. **Perform 15 reps on each leg.**
- ❖ **Slow Hanging Knee Tuck** – Hang from an overhead bar or beam. From this position, simply tuck the knees towards the chest as in the lying or seated knee tuck. Squeeze as tight as possible for a moment at the top of the movement. **Perform 10 reps with a pause at the top.**

Developing Core Control Skills

This workout involves greater complexity and more important exercises for your long-term development like the side plank with twist. The more dynamic stability aspects will be a huge factor in preventing spinal re-injury. This is a direct level-up on the previous workout, with a similar format.

As before, this is a no-rest workout where the pace should be smooth and consistent, but without long rests between exercises. If you need to take some rest, a short break (10-15 seconds) should be taken between (not during) rounds.

If you have to rest during rounds, slow down the total pace and focus on progressing it later.

Perform 5-10 rounds:

- ❖ **Bird Dog + Hip Car** – as the Bird Dog before, but performing a hip car (as described above) at the end of every repetition. This is one rep total – **perform 5 repetitions per side.**
- ❖ **Reverse Crunch to Deadbug** – Take the same setup position as a lying leg raise or deadbug, performing a complete lying leg raise, then bringing the knees closer to the face and curling the back up – off of the floor – into a maximum squeeze of the core. Lower the position into the deadbug position, holding briefly in the end position. **Perform 8 repetitions per side.**
- ❖ **Side Plank** - Take a side plank position by resting one elbow and hand on the floor, elevating the body to keep the head, hips, and feet aligned in all axes. Keeping the core tight and hips active, **hold this position for 20-30 seconds.**



Figure: Side Plank

- ❖ **Shoulder Taps** – Take a plank position with feet at hip-width and locked arms. From this position, maintain your balance while taking one hand off the floor and touching the opposite shoulder – and then repeat on the opposite side. **Perform 10 shoulder touches per side.**
- ❖ **Side Plank with Twist (Slow)** - Take a side plank position by resting one elbow and hand on the floor, elevating the body to keep the head, hips, and feet aligned in all axes. Keeping the core tight and hips active, tuck your top elbow underneath yourself, rotating from the spine as far as possible. **Perform 8-10 repetitions on each side.**

Dynamic Stability and Strengthening

This is a similar workout to the previous one, but provides greater rest so that you can focus on greater control in more-intense workouts. It doesn't step up the complexity too much, but the ball plank is a great addition while other options maintain strengthening and build work capacity momentum from the previous 2 workouts.

This is the first non-rehab workout, with a greater focus on simply building strength and applying it in normal workout contexts. It's a joint building workout, but also a core strengthening and control-building one that anyone can benefit from – post-injury or not.

There is a simple primer for stability, then you're going all-out for the second circuit or block.

Perform 5 rounds, own pace:

- ❖ **Shoulder Taps** – Take a plank position with feet at hip-width and locked arms. From this position, maintain your balance while taking one hand off the floor and touching the opposite shoulder – and then repeat on the opposite side. **Perform 10 shoulder touches per side.**
- ❖ **Bird Dog + Hip Car** – as the Bird Dog before, but performing a hip car (as described above) at the end of every repetition. This is one rep total – **perform 5 repetitions per side.**
- ❖ **Sideways Plank Walk** – Take a plank position with a tight core and low, active hips. From this position, begin moving sideways, trying to keep your core stable throughout. Bend your knees to reduce the difficulty, if needed. **Perform 10 seconds of walking in each direction.**

To Failure:

- ❖ **Ball Plank** – Take a normal plank position on a bosu ball or balance board, focusing on trying to not move. If this is too easy, move your elbows forwards through ball to add more challenge to the stability of the exercise. **Hold the position for 20-30 seconds at a challenging position.**



- ❖ **Hollow Hold** – Take an extended position on the floor with the arms overhead and legs straight out. Raise both the feet and hands above the body to create a ‘bowl’ shape. Keep actively pushing your belly button into the floor and actively lengthening your whole body. **Hold this position for 15 seconds.**

8 rounds, for time:

Strength-Endurance Burner

This is a great strength-endurance workout for integrating some odd movements in the hip flexors and rotational trunk muscles into your life. They’re a great addition for building more functional strength and simulating the things your body needs to do in the real world.

By adding complexity around the spine, we train to protect it from the unpredictable movements of the real world. It’s not a complex idea, but control in these movements can be difficult and should be in your mind throughout the whole workout.

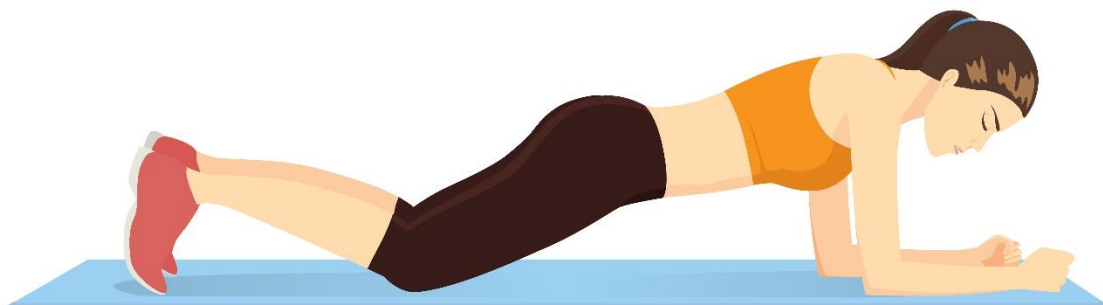
- ❖ **Foam Roller Knee Tuck** – Lay on the floor in the setup position for a lying leg raise. Take a foam roller in the space between your calves and hamstrings, squeeze it tightly throughout. Keeping tension on the foam roller, tuck your knees into your chest using your core and hip flexors. **Perform 12 repetitions.**
- ❖ **Single Leg Lying Leg Raise** – As in a lying leg raise, but performed one leg at a time. Focus on driving the “inactive” leg down into the ground while raising the other leg. **Perform 12 repetitions per side.**
- ❖ **Lying Around the World** – taking a lying position as in the lying leg raise, tuck your knees and come to a 90-degree position at the hip. From this position, draw the

largest possible circle with your feet and knees – moving them down and away from the body, as far as possible to one side, to the starting position, and then through to the other side. Do not let your lower back or shoulders lift from the floor during this large, circular motion. **Perform 5 repetitions in each direction.**

❖ **Bird Dog + Hip Car** – as the Bird Dog before, but performing a hip car (as described above) at the end of every repetition. This is one rep total – **perform 5 repetitions per side.**

❖ **Kneeling Step Up** – Take a kneeling position as described in the hip extension exercise. From this position, bring one leg up and around to take a lunging position. Complete the lunge from this position, standing up tall with feet together. Return to the kneeling position and **repeat this 8 times on each leg.**

❖ **8 Point Plank** – Taking a plank position, lower yourself until your hands, elbows, knees, and toes are all on the floor. Keep your belly button pressed up as high as possible and hips low. From this position, extend the space between your elbows and knees until you feel a very clear challenge on the core muscles. **Hold this position for as long as possible at the longest possible distance.**



Strength and Intensity

This is another rested, higher-complexity workout that is about developing skills and providing a more difficult challenge rep-to-rep than others.

It has 2 major circuits which gives you time to focus on different things. First circuit priorities are control and stability in the middle. Second circuit priorities are good movement and a consistent pace to build work capacity in some new, punishing positions.

4 rounds, minimal rest:

- ❖ **Reverse Crunch to Deadbug** – Take the same setup position as a lying leg raise or deadbug, performing a complete lying leg raise, then bringing the knees closer to the face and curling the back up – off of the floor – into a maximum squeeze of the core. Lower the position into the deadbug position, holding briefly in the end position. **Perform 8 repetitions per side.**

- ❖ **8 Point Plank** – Taking a plank position, lower yourself until your hands, elbows, knees, and toes are all on the floor. Keep your belly button pressed up as high as possible and hips low. From this position, extend the space between your elbows and knees until you feel a very clear challenge on the core muscles. **Hold this position for as long as possible at the longest possible distance.**

- ❖ **Side Plank Twist** - Take a side plank position by resting one elbow and hand on the floor, elevating the body to keep the head, hips, and feet aligned in all axes. Keeping the core tight and hips active, tuck your top elbow underneath yourself, rotating from the spine as far as possible. **Perform 8-10 repetitions on each side.**

4–8 rounds, for time:

- ❖ **Seated Knee Tuck** – Taking a seated position on the floor with your arms supporting you and legs straight (but raised off the floor), bring your knees up to your chest with the core and hip flexors. Squeeze them as close to the chest as possible, before returning to the seated position. **Perform 10 repetitions.**



- ❖ **Seated Heel Touch** – In the same seated/rear support as the seated knee tuck, place your feet flat on the floor. Crunch yourself up to support yourself and remove your hands from the floor. With the arms straight, bend at the waist to touch one heel, and then the other. **Repeat for 12 repetitions on each side.**

- ❖ **Garhammer Raise** – Hanging from an overhead bar, squeeze a foam roller between your knees, rotating the feet out and knees in. From this position, simply tuck the knees towards the chest as in the lying or seated knee tuck. **Perform 10 reps with a pause at the top.**

Victory Lap

This workout is a great indication that your spine is surrounded by strong, capable, well-worked muscles. It uses exercises that are common to all kinds of athletes but have a core of strength and control that will be useful for anyone and everyone.

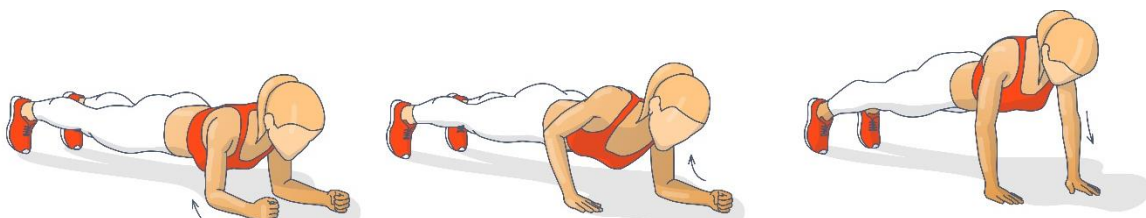
The point is that they're all quite difficult, and reaching this point shows you're no longer rebuilding your joints – you're strengthening them, their associated muscles, and your own performance.

Perform 5 rounds:

- ❖ **Seated Leg Raise** – As in the seated knee tuck, set up with your feet raised off the floor and hands supporting yourself. From this position, raise your legs as high as possible. The further back you recline, the easier this will be – and vice versa. **Perform as many reps as possible in 15 seconds.**
- ❖ **Side Plank Twist** - Take a side plank position by resting one elbow and hand on the floor, elevating the body to keep the head, hips, and feet aligned in all axes. Keeping the core tight and hips active, tuck your top elbow underneath yourself, rotating from the spine as far as possible. **Perform 8-10 repetitions on each side.**

Perform 10 rounds:

- ❖ **Shoulder Taps** – Take a plank position with feet at hip-width and locked arms. From this position, maintain your balance while taking one hand off the floor and touching the opposite shoulder – and then repeat on the opposite side. **Perform 10 shoulder touches per side.**
- ❖ **Seated Heel Touch** – In the same seated/rear support as the seated knee tuck, place your feet flat on the floor. Crunch yourself up to support yourself and remove your hands from the floor. With the arms straight, bend at the waist to touch one heel, and then the other. **Repeat for 12 repetitions on each side.**
- ❖ **Sideways Plank Walk** – Take a plank position with a tight core and low, active hips. From this position, begin moving sideways, trying to keep your core stable throughout. Bend your knees to reduce the difficulty, if needed. **Perform 10 seconds of walking in each direction.**



- ❖ **Lying Leg Raise** – Lay flat on the floor with the back flat and lower back pressed into the floor. From this position, raise your legs up towards your chest. Straighter legs are harder, while bent knees reduce the difficulty. Raise and lower slowly, focusing on keeping the body above the hips stable.

Hips



The hips are perhaps the most crucial joint as they form the anchor for the spine, are directly related to the knee, and experience some of the most complex forces and movement impetus. This leaves the hips as a hidden cause for many knee and back problems, as well as experiencing their own injury risks – especially in the SI joint and hip joint capsule.

These workouts have the lofty ambition of helping with all of these risk factors. They stabilise the spine at the point where it meets the hip, help to build SI joint health, and control the stability of the leg-hip complex.

There is a lot to do when rebuilding the strength and wellbeing of the hip – and even more when it comes to protecting it into the future. These workouts progress patiently through the most important steps for this process, from mobility to movement to control to strength and – finally – to power.

Movement

The hips have a large range and need to be moved with conscious effort, especially in how they relate to the core and spine. This workout is about practicing those movements in a simple and effective way.

The goal is maximum pain-free range of motion, and particularly keeping the core stable while you do so, and trying to feel the movements in the hip flexors and extensors as you move.

5 rounds, own pace:

- ❖ **Kneeling Lunge** – Kneeling in a lunging position, push your front hip down and forwards while keeping your hips active and chest upright. Push forwards until you feel the stretch in the front of your hip and focus on driving into this feeling. **Hold for 30 seconds on each side.**
- ❖ **Couch Stretch** – As in the kneeling lunge, but with your rear foot raised on a wall or raised surface (like a sofa, hence the name). From here, push forwards keeping the hips active and chest upright. You can lean forwards to relieve a little tension and then reverse the movement to move the hip flexors and improve the stretch. **Hold and move through this position for 30 seconds on each side.**
- ❖ **Straddle Stretch** – Sit on the floor with your legs as wide apart as possible, and completely straight. Lean forwards and keep adjusting your legs out to maintain a good stretch in the inner thigh – moving around to ease the tension and get comfortable in position. **Hold and move through this position for 30 seconds.**



5 rounds, own pace:

- ❖ **Cat-Cow** – Take an all-fours position with a neutral spine. From here, exaggerate your spinal flexion and extension in turn, curling up and then arching your back as slowly and deliberately as possible. **Perform 10 reps in each direction.**



- ❖ **Standing Toe-Touch** – From a standing position, keep your back flat and hinge at the hips to reach towards your toes. Get as far as possible and ‘pulse’ in and out of the maximum possible range. If you can touch your toes, try to touch your heels. **Hold and move through this position for 30 seconds.**



Figure: Cat-Cow

Movement and Fitness

This workout builds on the basic movement of the previous one with a greater focus on static control and slightly increased complexity. It starts to develop the control and muscle-feel that we started with, but with more confidence in the joint to take load.

The two circuits are simple, but will provide excellent stability, balance, and strengthening opportunities.

Perform 10 rounds, own pace:

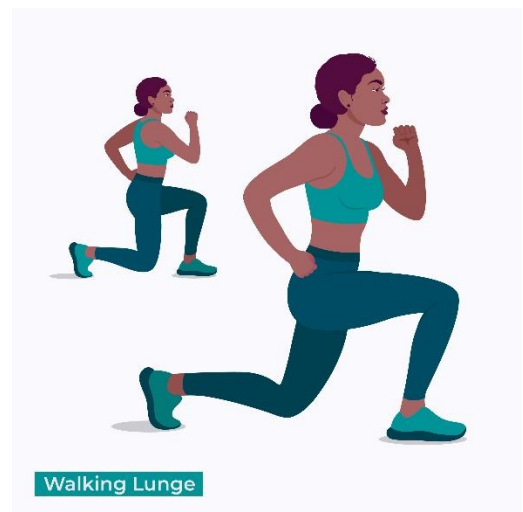
- ❖ **Paused Standing Deep Lunge** – From a standing position, step your front foot forward and keep your back leg straight. Use your hips to keep yourself upright and actively upright. Push into the extreme range by really getting into your front foot, until you feel a stretch in your ‘back’ hip. **Hold and move through this position for 30 seconds per side.**

- ❖ **Lateral Deep Lunge** – From a standing position, take a wide stance and really push into one leg, squatting down and back. Use this position to open up your hips until you feel a stretch in the inner thigh of the non-squatting leg. **Hold and move through this position for 30 seconds on each side.**

Perform 5 rounds, own pace:

- ❖ **Kang Squat with Toe-Hold** – Keep your knees in one place, hinging your hips back and letting your chest come down, as your centre of balance moves to the rear half of the foot. From this position, grab your toes and hinge down, pushing the knees forward to squat as upright as possible with the weight in your mid-foot, holding briefly, and then reversing the movement. **Perform 15 repetitions.**

- ❖ **Walking Lunge** – Perform a deep lunge, stepping down and forward into a similar position to the standing lunge, before reversing the movement. Take a step forwards and repeat. **Perform 10 repetitions per leg.**



Bodyweight Strengthening

This workout involves another small increase in complexity and is specifically tailored towards using the hips in their natural settings. It builds control when stepping up and down, and starts to develop both strength and familiarity in important movements like hip flexion and using the legs and hips together.

8 rounds, smooth pace but minimal rest:

❖ **Paused Standing Deep Lunge** – From a standing position, step your front foot forward and keep your back leg straight. Use your hips to keep yourself upright and actively upright. Push into the extreme range by really getting into your front foot, until you feel a stretch in your ‘back’ hip. **Hold and move through this position for 30 seconds per side.**

❖ **Lateral Deep Lunge** – From a standing position, take a wide stance and really push into one leg, squatting down and back. Use this position to open up your hips until you feel a stretch in the inner thigh of the non-squatting leg. **Hold and move through this position for 30 seconds on each side.**



❖ **Slider Lateral Lunge** – As in the lateral deep lunge, but use a slider or cloth under your non-squatting leg to provide instability, and actively drag your heel around using your inner thigh and hip muscles. **Perform 6 reps on each leg.**

❖ **Step-Down** – On a knee-height box, keep your back flat and hips neutral, and reach down with one foot to touch the floor. This is a more difficult exercise than expected, so start slowly and be willing to start on a very low box. Tap the floor with the heel, then reverse. **Perform 10 repetitions per leg.**

❖ **Slow (Low) Step-Up** – Standing in front of a box at roughly knee height (or higher, with experience), step up by raising your knee up high and pushing through your whole foot. Extend the hip and knee together, until you’re stood upright on the box. **Perform 10 repetitions per leg with deliberate slowness.**

Strengthening with External Loads

This workout begins to develop strength in the hips and legs. It should be built on proper spinal control, as per the core workouts above, and focusing on keeping everything above the hips stable, while the hips and legs move through their exercises with control and deliberate movement.

Perform 6 rounds, for weight:

- ❖ **Goblet Lateral Deep Lunge** – As in the lateral deep lunge, but hold a dumbbell to your chest in the ‘goblet’ position. Keep the upper back tight and use the hips to keep yourself upright, pulling the dumbbell into your body actively. **Perform 12 repetitions per leg.**
- ❖ **Single-Leg Dumbbell Deadlift** – Take a single leg stance with a dumbbell in the opposite hand. Slowly hinge at the hips, lowering the dumbbell to touch the floor near your foot. Reverse the motion to stand up tall, squeezing the glutes and keeping the core tight. **Perform 8 slow repetitions per leg.**



Every 90s for 6 rounds:

❖ **Deep Lunge with Rotation** – As in the paused standing deep lunge, but holding a plate at arms' length. At the end of the movement, perform a quarter-circle rotation across your body into the front leg (the one you're lunging into). **Perform 6 repetitions per leg.**

❖ **Deep Lunge (On Riser)** – Place the heel of your front foot on a riser or plate to elevate the heel. Hold a plate in your hands or take a dumbbell in the goblet position. Perform a full deep lunge as far as possible, holding briefly, and then standing up by extending your leg and hip fully. **Perform 8 repetitions per leg.**

3 rounds, 60s rest:

❖ **Wall Sit** – Sit with your back pressed against the wall with your knees and hips at a 90-degree angle. Deliberately push yourself into the wall, keeping your whole body completely stable. **Hold this position for as long as possible.**



Loaded Work Capacity

With no rest between exercises or circuits, this workout aims to use existing strength movements to build work capacity. This is not only great for ensuring better hip posture in the long-term, but also helps flush to joint itself with blood to improve tendon recovery and remodelling.

These exercises should be performed with the same eye to control and stability as the previous workout. The only difference is that there's less time between them and your main focus should be a consistent pace from start to finish. You can slow down – **just don't stop.**

Perform 6-12 rounds:

- ❖ **Kneeling Hip Extension** – Kneel on the floor, sitting on your heels, keeping your chest upright with a weight in your hands (dumbbells) or back (barbell). From here, keep your core tight and extend your hips to get as upright as possible with your hips ‘in’ and squeezed tight. **Perform 20 repetitions.**

- ❖ **Paused Standing Deep Lunge** – From a standing position, step your front foot forward and keep your back leg straight. Use your hips to keep yourself upright and actively upright. Push into the extreme range by really getting into your front foot, until you feel a stretch in your ‘back’ hip. **Hold and move through this position for 30 seconds per side.**

- ❖ **Kneeling Step Up** – Take a kneeling position as described in the hip extension exercise. From this position, bring one leg up and around to take a lunging position. Complete the lunge from this position, standing up tall with feet together. **Return to the kneeling position and repeat this 8 times on each leg.**

- ❖ **Wide Partial Squat** – Take a wide stance (feet outside of hips) and keep your chest upright. Keeping the knees out – and in line with the toes – lower your hips back and down. Use your hip muscles to keep your torso upright, going down as far as is comfortable without compromising your knee-toe alignment. Stand up by reversing the movement, extending the hips and knees. **Perform 8 reps.**

Hip Strength and Power

This workout integrates the strengthening exercises used so far with a greater focus on dynamic, power exercises. This means both developing the ability to produce force and practicing both the absorption and re-bounding of ground-contact.

These are crucial skills, since studies are clear that jumping and landing are some of the most important predictors of injury risk. Getting better at them lowers injury risk in the long-term, and this is the crowning practice in your hip rebuilding workouts to ensure better long-term health.

Perform 5 rounds, own pace:

- ❖ **Deep Lunge (On Riser)** – Place the heel of your front foot on a riser or plate to elevate the heel. Hold a plate in your hands or take a dumbbell in the goblet position. Perform a full deep lunge as far as possible, holding briefly, and then standing up by extending your leg and hip fully. **Perform 8 repetitions per leg.**
- ❖ **Triple Bunny Hops** – Take a small hop forward focusing on getting lots of power from the knees and hips, but also landing lightly. Then, with this landing, immediately go into the next jump. **Try to jump at around 70% force for 3 jumps in a row – it's not about height or distance!**



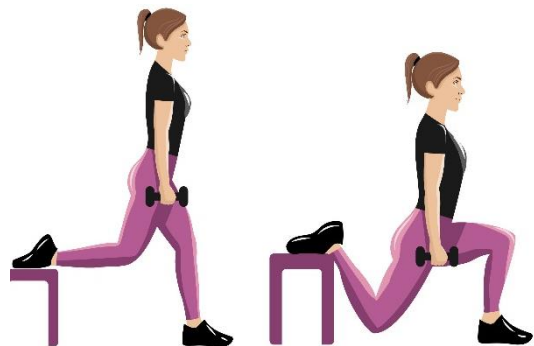
EMOM, 6 minutes:

- ❖ **Jumping Step-Up** – Take a knee-high box or similar stable surface with plenty of headroom. Place one foot on the box with the knee and hip bent, keeping your weight on the front foot. From this position, perform a step up with as much force as possible – extending your legs and hips to jump off of the box (on one leg). Cushion your landing and focus on keeping balance. **Repeat for 5 reps each side.**

Perform 5 rounds, smooth pace:

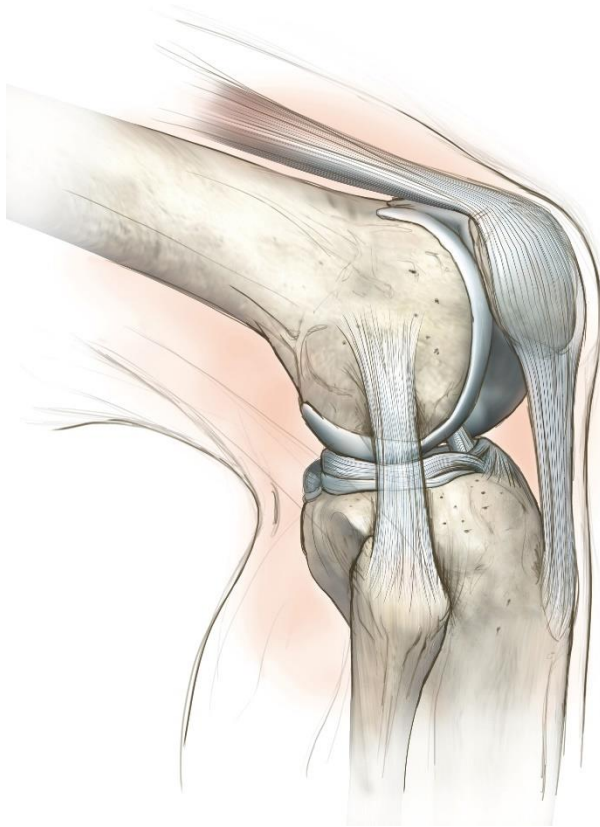
- ❖ **Ankle bounce** – Keeping your legs and hips extended and core tight, bounce on your ankles, trying to get high while keeping the landing soft and absorbing the force. Focus on keeping bolt upright and spending less time on the floor as much as possible. **Perform 12 – 20 repetitions.**

- ❖ **Bulgarian Split Squat** – With the rear foot elevated, slowly lower yourself down on the front foot to sink your knee as close to the floor as possible. Keep yourself upright with active hips (especially the ‘back’ hip). From the bottom position, reverse the movement to stand up, keeping weight in both of your feet and driving up tall. **Perform 10 reps each side with no pause at the top or bottom.**



- ❖ **Exploding Half Lunge** – Perform a normal lunging movement, but focus on speed on the way up. Using the power of your front leg and hip, press down forcefully to propel yourself off your front foot, lifting it off the floor and rocking to the back foot at the top of the movement. **Cushion your landing and perform 8 reps per leg.**

Knees



The knees – like the hips – are an important joint in their own right but also for the position they occupy between the joints above and below them. The knees are between the hip and ankle, which makes them susceptible to injury when either of these joints is dysfunctional – or simply under-trained.

Knees are semi-hinge joints that have some rotational capacity, a significant amount of potential for movement out of the plane of the body, and a huge amount of day-to-day work. They are constantly loaded by virtue of being “below the seated position”, and take up a serious amount of load due to the simple act of walking.

Knee injuries are common and the rebuilding/strengthening pathway is the same as other joints – mobilise, move, strengthen, power. These knee workouts follow this track with a focus on strengthening both sides of the knee (quads and hamstrings), as well as both above and below – integrating the knee, hip, and ankle to reduce the most common and neglected risk factors.

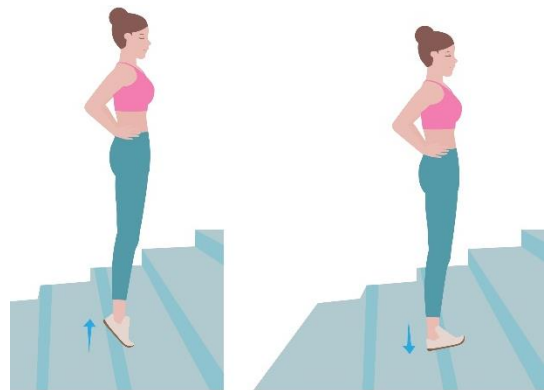
Movement

This workout is a simple way to get familiar with the whole range of the muscles around the knee, as well as using it in combination with the hips. It should begin to alleviate any stiffness or tension around the knee, as you build strength and stabilize the joint.

This is nothing special, but offers great relief around the knee and hip, and could/should be used every day – or even twice a day – during early rebuilding efforts.

Perform 5-15 rounds, own pace:

- ❖ **Walking Toe Touch** – As with the standing toe touch, but one leg at a time. Take a step forwards and hinge down to touch the toe of the front leg. Repeat on the opposite side. **Perform 10 reps on each leg.**
- ❖ **Couch Stretch** – As in the kneeling lunge, but with your rear foot raised on a wall or raised surface (like a sofa, hence the name). From here, push forwards keeping the hips active and chest upright. You can lean forwards to relieve a little tension and then reverse the movement to move the hip flexors and improve the stretch. **Hold and move through this position for 30 seconds on each side.**
- ❖ **Straddle Stretch** – Sit on the floor with your legs as wide apart as possible, and completely straight. Lean forwards and keep adjusting your legs out to maintain a good stretch in the inner thigh – moving around to ease the tension and get comfortable in position. **Hold and move through this position for 30 seconds.**
- ❖ **Gastroc-Soleus Stretch** – Place your hands on the wall and lean forwards with one foot further back. Keep the ankle as closed as possible and push your weight backwards into that leg until you feel the stretch in the back of your calf. **Hold and move through this position for 30 seconds.**
- ❖ **Calf Raise and Stretch** – Place the front of your feet on a raised surface like a plate or step. From this position, sink to the absolute lowest position possible, ideally with the feeling of a stretch in the calf muscles. From this position, extend your ankles until you're as tall as possible and hold for a moment. **Perform 15 repetitions.**



Movement and Control

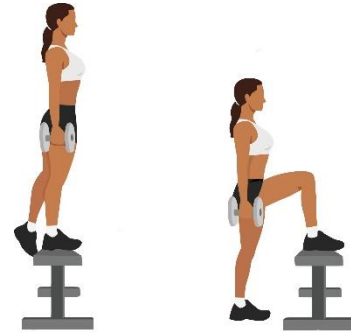
This workout develops movement skill, control, and strength around the positions that were practiced in the previous workout. It has more focus on the development of musculature, and using it to control increasingly complex movements.

The workout is smooth, consistently paced so there will be no significant stops. The idea is to slow down, but not stop, to a pace you can use consistently throughout. This will support recovery and remodelling of the connective tissues, as well as providing a natural pace-progression as you grow stronger and repeat the workout over time.

5-10 rounds, minimal rest:

- ❖ **Kneeling Hip Extension** – Kneel on the floor, sitting on your heels, keeping your chest upright with a weight in your hands (dumbbells) or back (barbell). From here, keep your core tight and extend your hips to get as upright as possible with your hips ‘in’ and squeezed tight. **Perform 20 repetitions.**
- ❖ **Slider Leg Curl** – Lay down flat on the floor with your heels on a slider or an exercise ball. From this position, keep the hips extended and core tight, but roll the slider or ball towards your buttocks, squeezing the hamstrings. Move slowly in both directions to build better control and joint strength. **Perform 10 slow repetitions.**
- ❖ **Single-Leg Dumbbell Deadlift** – Take a single leg stance with a dumbbell in the opposite hand. Slowly hinge at the hips, lowering the dumbbell to touch the floor near your foot. Reverse the motion to stand up tall, squeezing the glutes and keeping the core tight. **Perform 8 slow repetitions per leg.**

- ❖ **Step-Down** – On a knee-height box, keep your back flat and hips neutral, and reach down with one foot to touch the floor. This is a more difficult exercise than expected, so start slowly and be willing to start on a very low box. Tap the floor with the heel, then reverse. **Perform 10 repetitions per leg.**



Basic Stretching and Strengthening

This is a simple two-block workout that divides into control-mobility and strengthening. The first circuit is a perfect knee warm-up, building range and control in all directions, while providing a mild strengthening stimulus.

The second block is a simple but effective combination of large-range knee exercises to strengthen the quadriceps and hamstrings, as well as the myriad small stabiliser muscles around the knee and hip. This makes it a great choice to develop over time – even as you become much stronger.

This workout is accessible, but it's also easy to progress – and even in good health, it is one of the best “bang for your buck” knee workouts around.

Perform 3-5 rounds, own pace:

- ❖ **Couch Stretch** – As in the kneeling lunge, but with your rear foot raised on a wall or raised surface (like a sofa, hence the name). From here, push forwards keeping the hips active and chest upright. You can lean forwards to relieve a little tension and then reverse the movement to move the hip flexors and improve the stretch. **Hold and move through this position for 30 seconds on each side.**

- ❖ **Slider Leg Curl** – Lay down flat on the floor with your heels on a slider or an exercise ball. From this position, keep the hips extended and core tight, but roll the slider or ball towards your buttocks, squeezing the hamstrings. Move slowly in both directions to build better control and joint strength. **Perform 10 slow repetitions.**



- ❖ **Slider Lateral Lunge** – As in the lateral deep lunge, but use a slider or cloth under your non-squatting leg to provide instability, and actively drag your heel around using your inner thigh and hip muscles. **Perform 6 reps on each leg.**

Perform 5-15 rounds:

- ❖ **Single-Leg Dumbbell Deadlift** – Take a single leg stance with a dumbbell in the opposite hand. Slowly hinge at the hips, lowering the dumbbell to touch the floor near your foot. Reverse the motion to stand up tall, squeezing the glutes and keeping the core tight. **Perform 8 slow repetitions per leg.**
- ❖ **Bulgarian Split Squat** – With the rear foot elevated, slowly lower yourself down on the front foot to sink your knee as close to the floor as possible. Keep yourself upright

with active hips (especially the ‘back’ hip). From the bottom position, reverse the movement to stand up, keeping weight in both of your feet and driving up tall. **Perform 10 reps each side with no pause at the top or bottom.**

Deep Strength

This workout begins to apply loads to some of the exercises you’ve already been working on. The goblet lateral lunge, for example, is a challenging exercise that forces the development of strength and control in the posture of the hips, knees, and core.

It also exposes your body to a significant increase in control-demand and movement complexity, so be sure to take it slow the first time. As you become more familiar, this workout takes very well to increasing weight over time and building strength and control in the hip-knee complex.

Every minute, on the minute, for 5 minutes:

- ❖ **Goblet Lateral Deep Lunge** – As in the lateral deep lunge, but hold a dumbbell to your chest in the ‘goblet’ position. Keep the upper back tight and use the hips to keep yourself upright, pulling the dumbbell into your body actively. **Perform 8 slow repetitions per leg.**

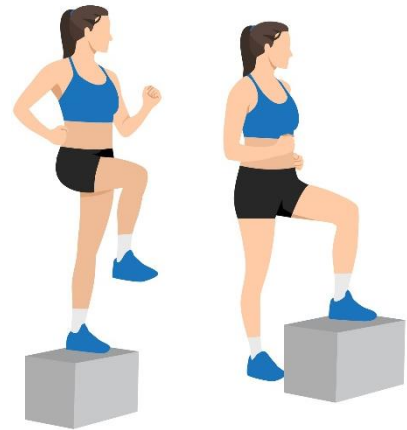
Perform 5-8 rounds, own pace:

- ❖ **Reverse Nordic** – Begin in the same kneeling position as the kneeling hip extension. Keeping a straight line from your knee to your head, lean back by bending the knee. Proceed to bend as far back as is comfortable on the knees, before reversing the movement by keeping the hips extended and extending the knee to bring yourself upright. **Perform as many reps as comfortably possible.**

- ❖ **Goblet Lateral Deep Lunge** – As in the lateral deep lunge, but hold a dumbbell to your chest in the ‘goblet’ position. Keep the upper back tight and use the hips to keep yourself upright, pulling the dumbbell into your body actively. **Perform 12 repetitions per leg.**

Perform 5-15 rounds, own pace, for the ‘pump’:

- ❖ **Slow Step-Up** – Standing in front of a box at roughly knee height (or higher, with experience), step up by raising your knee up high and pushing through your whole foot. Extend the hip and knee together, until you’re stood upright on the box. **Perform 10 repetitions per leg with deliberate slowness.**



- ❖ **Single-Leg Dumbbell Deadlift** – Take a single leg stance with a dumbbell in the opposite hand. Slowly hinge at the hips, lowering the dumbbell to touch the floor near your foot. Reverse the motion to stand up tall, squeezing the glutes and keeping the core tight. **Perform 8 slow repetitions per leg.**

Power

This workout expands on all the high-quality strength and control of previous workouts by adding a significant amount of power exercise. This is an important addition for knees and hips, in particular, where the ability to produce and absorb force quickly is essential to long-term strength, health, and injury-prevention.

Jumping and power exercises, in particular, should be performed sub-maximally at first. They introduce a lot of landing forces and you should focus on jumping with soft landings, and with a focus on proper balance and comfort.

You can progress the effort of these jumps – slowly – through repeated uses of this workout. It is a good thing to build power, but it must be developed even more **patiently than strength!**

Perform 5 rounds, own pace:

- ❖ **Slow Step-Up** – Standing in front of a box at roughly knee height (or higher, with experience), step up by raising your knee up high and pushing through your whole foot. Extend the hip and knee together, until you're stood upright on the box. **Perform 5 repetitions per leg with deliberate slowness.**
- ❖ **Jumping Step-Up** – Take a knee-high box or similar stable surface with plenty of headroom. Place one foot on the box with the knee and hip bent, keeping your weight on the front foot. From this position, perform a step up with as much force as possible – extending your legs and hips to jump off of the box (on one leg). Cushion your landing and focus on keeping balance. **Repeat for 5 reps each side.**

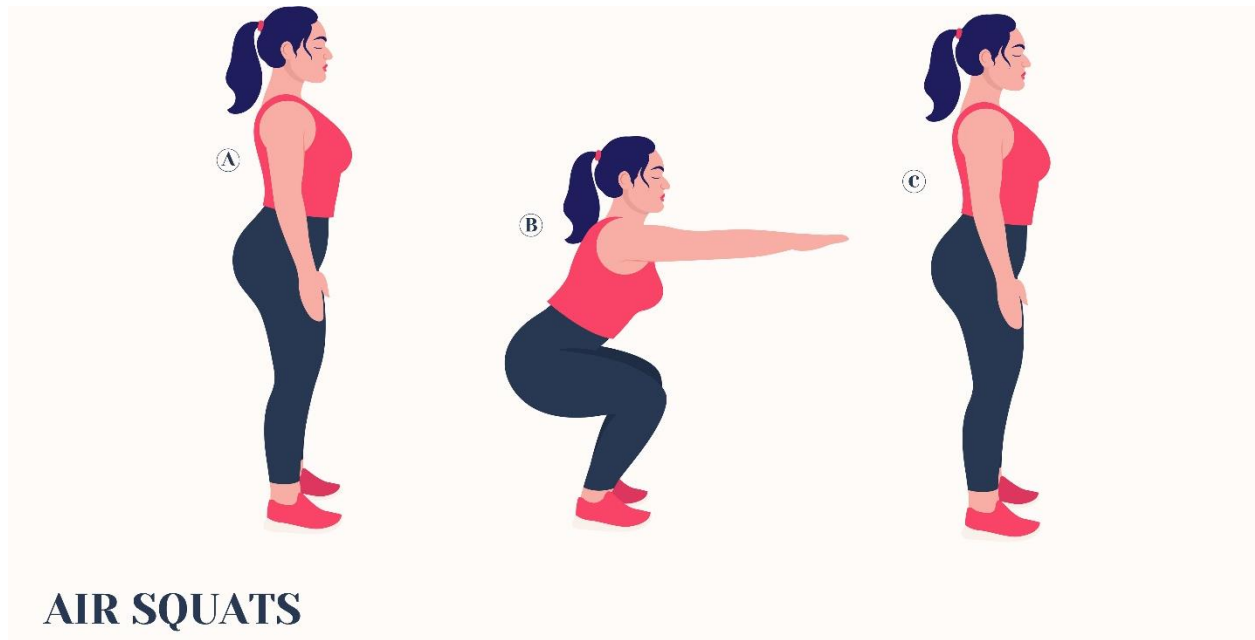
Perform 6 rounds, own pace:

- ❖ **Box Jump** – Find a low box or other stable surface to jump on. Bending at the knees and hips, jump as high as possible focusing on getting your hips (not feet) as high as you can. Try to land on a low box or step with your legs as straight as possible. Jump higher, don't jump into a more bent knee – the hip height is the only thing that matters. **Perform 5 reps.**

Perform 5-15 rounds:

- ❖ **Bulgarian Split Squat** – With the rear foot elevated, slowly lower yourself down on the front foot to sink your knee as close to the floor as possible. Keep yourself upright with active hips (especially the 'back' hip). From the bottom position, reverse the movement to stand up, keeping weight in both of your feet and driving up tall. **Perform 8 reps on each leg.**

- ❖ **Air squat jump** – Take a normal hip-width stance and squat all the way down, keeping your weight in the midfoot. Reverse the squat into a small jump, focusing on extending your hips and knees. Be sure to gently land and absorb the force through the lower body. **Perform 6 repetitions.**



Ankles

Despite having some of the highest impact forces in the body exposed to them regularly, the ankles are often neglected. Ankle injuries are typically small and common, such as eversion strains, “rolled ankle” complications, and overuse injuries from exercise like running (especially running *poorly*).

The strengthening and rebuilding of ankles is not complicated. It follows a streamlined version of the other joints with a simple move-control-



strengthen cycle. We are only using 3 workouts to strengthen the ankles, but this alone will provide a huge stimulus compared to the typical training of ankles: which is nothing, in most people.

These workouts also have the distinct benefit of being able to be used together in a normal training week. The first workout is mobility based and can be used as a warm-up option. The second workout can be used as a bolt-on for other workouts and offers serious short-term benefits. The final workout is a powerful all-purpose ankle strengthening protocol for use 1-2 times per week.

Basic Ankle Movement

The development of proper ankle mobility and movement patterns is commonly neglected. This workout introduces you to the basic exercises you will need to practice and use to develop mobility in the ankles.

While the majority of these exercises are stretch-focused, the goal is movement. Get towards the end of your range, and then focus on pulsing in and out of the stretch-feeling, getting your ankle and calf muscles comfortable with these end-ranges.

As with other stretching and movement workouts, this should be practiced as often as is convenient – even if you have to use fewer rounds.

Perform 3-15 rounds:

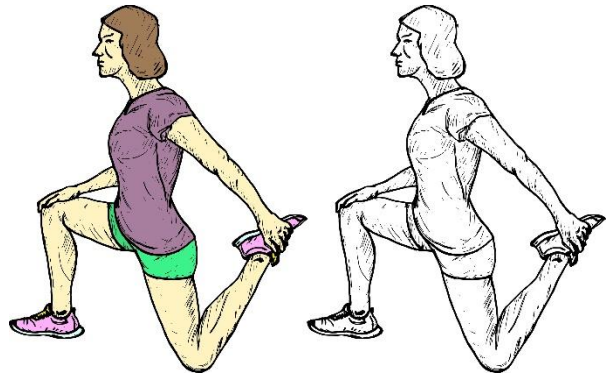
- ❖ **Gastroc-Soleus Stretch** – Place your hands on the wall and lean forwards with one foot further back. Keep the ankle as closed as possible and push your weight backwards into that leg until you feel the stretch in the back of your calf. **Hold and move through this position for 30 seconds.**

- ❖ **Calf Raise Stretch** – Place the front of your feet on a raised surface like a plate or step. From this position, sink to the absolute lowest position possible, ideally with the

feeling of a stretch in the calf muscles. From this position, extend your ankles until you're as tall as possible and hold for a moment. **Perform 15 repetitions.**

- ❖ **Tibialis Anterior Raise** – Take the same position as the L-sit described above, and start to creep your feet out further from the wall. Once you're in a position that feels stable, but where your feet are forwards of your knee, keep your weight in your heel and raise the balls of your feet towards your shins as far (and hard) as possible. **Perform 20 repetitions (or until failure).**

- ❖ **Kneeling Ankle Stretch** – Take a kneeling stance like in the deep lunge. Then, grab the ball of your foot and – without letting your heel pop off the floor – place your bodyweight through the top of your knee to push it forwards. **This should cause an immediate stretch in the calf muscle, and you should move through this stretch for 30 seconds on each leg.**



- ❖ **Kneeling Sideways (Overbalance) Stretch** – After the kneeling ankle stretch, take the same position and begin applying pressure to your knee in directions to the side of the foot. You want to maintain the same knee-forward position, but combined with moving the ankle towards and then away from your mid-line. **Spend around 30-45 seconds moving around the biggest possible circle on each leg.**

Adding Complexity

This workout incorporates the stretching and end-range of the calf muscle and ankle with real-world movements. It is an important step in strengthening the calf and its associated musculature, as well as introducing them to higher work capacity, essential for the hard-working calves and tibialis anterior muscles.

This is a really repeatable workout and should be taken as another “as often as is convenient” choice. Performing this kind of workout every 1-2 days is a great way to push up work capacity, once you are able to recover properly and don’t feel too much tightness or soreness the following day.

Perform 5-15 rounds, smooth pace with minimal rest:

- ❖ **Gastroc-Soleus Stretch** – Place your hands on the wall and lean forwards with one foot further back. Keep the ankle as closed as possible and push your weight backwards into that leg until you feel the stretch in the back of your calf. **Hold and move through this position for 30 seconds.**
- ❖ **Calf Raise Stretch** – Place the front of your feet on a raised surface like a plate or step. From this position, sink to the absolute lowest position possible, ideally with the feeling of a stretch in the calf muscles. From this position, extend your ankles until you’re as tall as possible and hold for a moment. **Perform 15 repetitions.**
- ❖ **Kneeling Step Up** – Take a kneeling position as described in the hip extension exercise. From this position, bring one leg up and around to take a lunging position. Complete the lunge from this position, standing up tall with feet together. **Return to the kneeling position and repeat this 8 times on each leg.**

Stability / Light Str / Power

This simple 3-part workout focuses on building strength, mobility, and power in the calves and ankles. It’s a simple but super-effective workout that can be used consistently into the future and offers a way to not only rebuild your ankles, but develop them to serious strength and good stiffness (in the tendons).

It may not involve the most complex movements, but this simple workout will help you build calves and ankles stronger than just about anyone. It’s a great workout to include 1-2 times a week even as a healthy person with no more ankle pain or concerns. This is how you prevent reinjury.

3 rounds, own pace:

- ❖ **Calf Raise and Stretch** – Place the front of your feet on a raised surface like a plate or step. From this position, sink to the absolute lowest position possible, ideally with the feeling of a stretch in the calf muscles. From this position, extend your ankles until you're as tall as possible and hold for a moment. **Perform 15 repetitions.**
- ❖ **Step-Down** – On a knee-height box, keep your back flat and hips neutral, and reach down with one foot to touch the floor. This is a more difficult exercise than expected, so start slowly and be willing to start on a very low box. Tap the floor with the heel, then reverse. **Perform 10 repetitions per leg.**
- ❖ **Kneeling Step Up** – Take a kneeling position as described in the hip extension exercise. From this position, bring one leg up and around to take a lunging position. Complete the lunge from this position, standing up tall with feet together. **Return to the kneeling position and repeat this 8 times on each leg.**

5 rounds, smooth pace, 30–45 sec rest between rounds:

- ❖ **Ankle bounce** – Keeping your legs and hips extended and core tight, bounce on your ankles, trying to get high while keeping the landing soft and absorbing the force. Focus on keeping bolt upright and spending less time on the floor as much as possible. **Perform 12 – 20 repetitions.**



- ❖ **Air squat jump** – Take a normal hip-width stance and squat all the way down, keeping your weight in the midfoot. Reverse the squat into a small jump, focusing on extending your hips and knees. Be sure to gently land and absorb the force through the lower body. **Perform 6 repetitions.**

Every 30 seconds for 3 minutes:

- ❖ **Triple Bunny Hops** – Take a small hop forward focusing on getting lots of power from the knees and hips, but also landing lightly. Then, with this landing, immediately go into the next jump. **Try to jump at around 70% force for 3 jumps in a row – it's not about height or distance!**

Conclusion: Taking Care of Your Joints to Take Care of Yourself in the Long-Run

The development of joint strength and resilience doesn't just stop when you get back to 'normal'. Rebuilding joints is a process of getting back to pain-free, healthy movement – and then making sure you stay there by building a surplus of structural strength in joint tissues, as well as the coordination and muscular strength around them necessary for long-term health.

Simply, the line between recovery, rehab, and performance doesn't exist. It's a grey area between each one that you will work through with these workouts – if you keep them in your training regularly, you'll be able to develop from injured to healthy to injury-resilient in your own time.

Be patient and remember that all of these developments take a long time – even compared to muscle growth. You're going to pass the time regardless, and the smart use of workouts to rebuild, strengthen, and protect joints is one of the best uses of your time with exercise and any workout.

Remember to consult your doctor or physio if you have any doubts, concerns, or pains. Smart workouts and recovery can help you take good care of your body, but it's important to know where you're at right now and make sure your training is always appropriate to your recovery and strength levels!

