



olympic weightlifting

fundamentals

INTRODUCTION:

The purpose of this manual is to be used as an ongoing reference and resource when implementing and teaching the fundamentals of Olympic weightlifting.

Aside from the practical knowledge, skills-based learning and coaching experience that you will gain from the workshop, this manual also aims to give a deeper understanding of the often complex nature of Olympic weightlifting.

Ultimately, this will give fitness professionals and trainers all the knowledge they will need when teaching and coaching beginners, and for preparing weightlifting protocols into safe and effective, regular training programs and sessions.

Important Note – To successfully gain your certificate in Olympic Weightlifting Fundamentals, there is a theoretical exam and a practical assessment that will be conducted as part of this course, as well as a 100% mandatory attendance. This manual will serve as a study guide for these assessments, so make sure you read and study this manual prior to the commencement of the workshop, to give you the best chance of successfully passing the course. For more information on the assessment process, please refer to the *Assessment Procedure* section of this manual.

AIMS OF THE OLYMPIC WEIGHTLIFTING WORKSHOP AND MANUAL:

- Introduce and define the sport of Olympic weightlifting, including training methodology, different types of equipment, training environments and lifting technique.
- Explore the two weightlifting specific lifts in detail, the Snatch and the Clean and Jerk, as well as the rules of competition and the unique history of this rich and powerful sport.
- Explore the methods surrounding safe weightlifting and training practise, as well as the best and most relevant ways to introduce this training to clients from all populations.
- Discover how to create an optimal training space, that is safe and hazard free, for participating and training in weightlifting specific activities.
- Discover the unique benefits that weightlifting has to offer, and what this means to clients' goals in terms of strength, power, speed, metabolic conditioning, coordination, motor skill acquisition, mobility and flexibility.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

- Understand how, statistically, Olympic weightlifting is one of the safest sports around, and how this style of lifting can benefit the general and broader population.
- Learn and teach the optimal Olympic weightlifting progressions, for safely advancing beginners into competent Olympic lifters.
- Learn the best and most effective strategies for introducing Olympic weightlifting fundamentals into various training programs, safely and effectively.
- Provide basic screening and assessment protocols for assessing and qualifying clients' readiness for participating in Olympic weightlifting exercises and Olympic weightlifting training programs.
- Learn effective movement preparation strategies for readying and mobilising clients to the rigors and stresses of this style of resistance training.
- Discover how to identify and correct common faults and technical problems, with safe and easy exercise regression and specific coaching cues.
- Explore the fundamentals of Weightlifting programming, and how to create simple planning strategies for continual and progressive overload for clients.
- Learn how to periodise Olympic weightlifting exercises and the key fundamentals of Olympic lifting into either Weightlifting specific programs, or when programming an integrated model.
- To provide an avenue for ongoing support, so participants can follow up on questions and queries outside of the workshop, and to help them to continue to evolve as a Personal Trainer.

WHAT YOU WILL GAIN FROM THIS COURSE:

After completing the Iron Edge Olympic Weightlifting Course, you will have a deeper understanding of the theoretical and technical nature of Olympic weightlifting and Olympic weightlifting training. As a trainer you will also have greater knowledge and insight into the relevance of this type of training for the greater population, as well as how to safely relate this methodology to best suit the needs and goals of your clients.

Olympic weightlifting is a rich, powerful and athletic sport that is simple in nature but extremely complex in practice and application. By attending this program, you will learn the theoretical and practical knowledge for teaching weightlifting exercises to beginners and novices, safely and effectively.

With the internet littered with so-called experts, it can be very difficult to gain accurate and complete knowledge surrounding generalised training topics, let alone weightlifting specifically. This is why the Iron Edge Olympic Weightlifting Fundamentals course has been purposefully written to give the trainer everything they need to give appropriate tuition and educated decisions for this style of resistance training, for their clients. This course has been personally written by Simon Heffernan, not only an expert in the field with over twenty years of experience, but also a qualified personal trainer, studio owner, and teacher. More importantly though, Simon is a two-time Commonwealth Games medallist, five-times world champion representative and multiple national champion title holder in the Sport of Olympic weightlifting. With plenty of academic and real-world experience, this course has been written by the best for those who seek the best, in terms of experience, knowledge and presentation.

By learning assessment and screening methods, exact technical knowhow of the key lifts, mechanical principles and how to coach, cue and correct, attendees will be armed with all the knowledge they will need to progress or regress clients safely. Remember, as a trainer, it is your responsibility to ensure safe training environments and training practices for your trainees, and to optimally prepare those trainees to better suit their needs and requirements.

Although not a pre-requisite, this course will also build upon the fundamental learning and knowledge gained from the Iron Edge Mechanics of Lifting course, taking your expertise as a trainer in the fitness industry another successful leap forward. Weightlifting is a tremendous sport and activity that can be enjoyed by young and old, and implemented for a variety of benefits. Discover the best methods and safest practice for accelerating both your knowledge and your clients' performance.

CONTACT AND SUPPORT

As part of this workshop, attendees will gain ongoing support in relation to the course content and information. Of course this manual will serve as a great resource manual for looking back and reaffirming knowledge and answering questions. But if answers cannot be found, questions can be forwarded to the presenters for further and future clarification. Of course here at Iron Edge, we understand that to evolve as an effective training, you need to be able to answer these all important questions, which is why we provide and offer this service. If you have any question regarding this material, or need some ongoing support, please direct your question to the appropriate presenter, and email the following address:

info@ironedge.com

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INTRODUCTION TO OLYMPIC WEIGHTLIFTING

WEIGHTLIFTING

In comparison with other strength sports such as powerlifting or strongman events, which test absolute strength (with or without lifting aids), Olympic weightlifting tests aspects of explosive strength and power. This activity is a true test of one's ballistic limits, and when compared with other forms of lifting, lifts are executed faster and with greater velocity, requiring greater power production with more mobility and a greater range of motion during their execution.

In terms of a true definition a trainer must familiarise themselves with the correct terminology and understand the distinct differences between what is weight training, weight lifting and weightlifting. 'Weightlifting' is of course, as defined by Dictionary.com, *the act, art, or sport of lifting barbells of given poundages in a prescribed manner, as a competitive event or conditioning exercise*¹. In the modern sport of weightlifting there are two standard lifts: the single-movement lift from floor to extended position (the snatch), and the two-movement lift from floor to shoulder position, and from shoulders to extended position (the clean and jerk). This needs to be clarified, because as you will see in the glossary, there are clear distinctions between, *powerlifting, bodybuilding, weight training, strength training and resistance training*. Understanding the definitions will give the trainer a more effective means for communication. Olympic weightlifting simply refers to the specific sport of lifting weight as contested by athletes at the Olympic Games.

While there are relatively few competitive Olympic weightlifters (or more simply *lifters*), the Olympic lifts and their components are commonly used by elite athletes in other sports to train for both explosive and functional strength. This is because weightlifting offers a very effective way to train strength, power, speed, coordination, balance, flexibility and mobility. All of these fitness parameters mean that if trainers gain confidence and competence in the teaching of the main lifts, they will have a great set of skills to stand out in the fitness industry, and service their clients' needs with greater diversity. But the benefits don't stop there. If we really consider what this style of training brings to the functional training table, it truly has some amazing real-world applications. Essentially, the Olympic lifts teach us strength, power and stability from the ground up, incorporating all elements of the kinetic chain, to effectively and efficiently move and manipulate load. These techniques don't just rely upon the smaller muscles of the arms, but incorporate every muscle in the body, working together to shift a ground-based or dead weight from the floor, into a safe rack-able or carrying position, in the front or overhead position. Naturally, this not only makes for safer and easier mechanics for moving and shifting those ground based objects, but also allows us to move some extremely heavy ones, from bags of sand and mulch around the garden all the way to those super heavy barbells in the gym.

In terms of athletic performance, one could define weightlifting as “jumping with weights”, a powerful and coordinated effort targeting the explosive triple extension of the ankles, knees and hips. This act of extending explosively can be seen in any kind of running, jumping, leaping or bounding sport or activity, whether exploding out of the blocks, competing in the long jump, jumping for a slam dunk, accelerating to dodge a tackle, the list goes on and on. Really, it's no surprise that we see vertical jump heights increase and sprint times improve² when Olympic lifting protocols have been used in training. Remember, clients don't have to be sports men and women to gain the advantage from Olympic lifting, by simply utilising these types of lifts and exercises with our clients, everyday actions and tasks can be improved. Weightlifting can build strength for resilience in activities and for moving or manipulating objects, power to climb stairs or run for the bus, speed to improve task efficiency, mobility to create greater freedom in movement and to improve postural alignment, and balance and co-ordination to assist with everyday tasks and neural function. With the right application and progression, weightlifting training can help improve the quality of life across the wider and greater population.

WEIGHTLIFTING HISTORY

People competing to see who can lift the heaviest weights available has been noted in diverse and ancient civilisations, including those found in Egypt, China and in ancient Greece. The modern sport of Olympic weightlifting traces its origins to the European competitions of the 19th century.

The first male world champion was crowned in 1891. Women's competition did not exist, and the weightlifters were not categorised by height or weight.

The first Olympic Games of 1896 included weightlifting in the Field event of the predecessor to today's Track and Field or Athletics event. In these early Games, a distinction was drawn between lifting with 'one hand' only and lifting with 'two hands'.

In 1920, weightlifting was an event in its own right. At these Games, which took place in Antwerp, Belgium, fourteen nations competed. The competition lifts were the 'one hand' snatch, the 'one hand' clean and jerk and the 'two hands' clean and jerk. At the next Olympic Games, in Paris, France, in 1924, the 'two hands' press and the 'two hands' snatch were added to the programme, making a total of five lifts.

In the Olympic Games after 1920, instead of requiring all competitors to compete against each other regardless of size, weight classes were introduced.

In 1928, the sport dropped the 'one hand' exercises altogether leaving only the three remaining exercises: the clean and press, the snatch and the clean and jerk. By 1972, the clean and press was discontinued due to the risk of spinal injuries, leaving the snatch and the clean and jerk as the two main lifts.

A competition for women was introduced at the 2000 Olympics in Sydney.

SAFETY AND THE SPORT OF OLYMPIC WEIGHTLIFTING

One of the first questions to arise regarding the sport of Olympic weightlifting usually centres around the concerns about potential injury. And rightly so – after all, participants are lifting and manipulating large and heavy loads, from the floor, and placing them overhead in a variety of different ways. Any rudimentary search of YouTube reveals a veritable sick delight of disastrous lifting mishaps. But in reality, and in the well-organised and structured training room, things are not always what they seem.

Naturally, with every activity that we do, there is always an associated risk factor. As trainers, we must always assess each and every client relative to the situation, to ensure that the training program will actually meet their specific needs, safely and effectively. Essentially this is a risk versus benefit analysis, to weigh up the potential implications and risk factors versus the overall reward and progressive development. Olympic weightlifting is no different, where thorough assessments, educated decisions and effective planning strategies must be made. In terms of total body strength, power and speed development, that incorporates all aspects of the kinetic chain, weightlifting can be an incredible way to target these kinds of goals. However, the real question becomes: Is my client physically ready and capable of this task? Are these goals appropriate and in line with their current needs? What kind of progression path does my client need to take? What are the kinds of limitations or restrictions that may prevent my client from performing these activities? Really, all of this becomes a very important task for the Trainer, where they must qualify and quantify whether weightlifting is indeed the appropriate training strategy for the client.

From a statistical point of view, it can be quite surprising how safe weightlifting can actually be. One particular study on the *Injury Rates and Profiles of Elite Competitive Weightlifters*³ decided to determine injury types, nature, time off and injury rates during Olympic weightlifting. The study compared data over a six-year period, with the USA elite male weightlifters training at the United States Olympic Training Centre. The study concluded that there were 3.3 injuries per 1000 hours of weightlifting exposure, 68.9% of injuries were either strains or tendonitis and 90.5% of injuries caused one or fewer days of training to be actually missed. Compare this study with one conducted in basketball, *A prospective study of injuries in basketball: a total profile and comparison by gender and standard of competition*⁴ where 24.7 injuries were recorded per 1000 hours of exposure, and injury rates and risks start to become clearer.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

The table below places things into perspective.

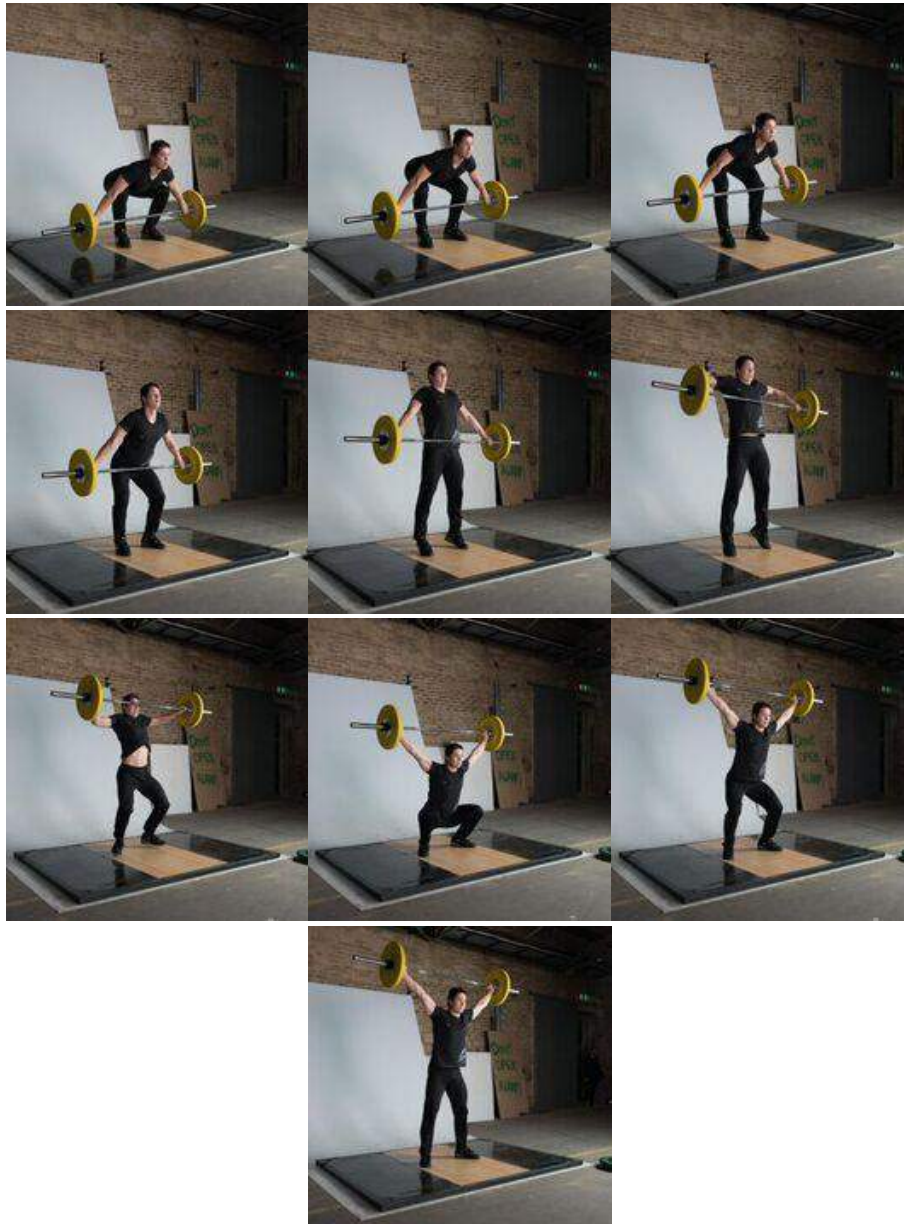
Sport	Injuries per 1000 hours of exposure
Basketball ⁴	24.7
Rugby ⁵	13.95
Running ⁶	2.5 - 12.1
Strongman ⁷	5.5
Powerlifting ⁹	4.4
Weightlifting ^{3,8}	2.6 - 3.3

Granted, weightlifting is a non-contact sport, where you only really compete against yourself, and don't have to worry about being tackled or struck by another opponent. Still, from a statistical standpoint, weightlifting does appear safer when compared to other activities, given that injuries are more commonly recorded along soft tissue lines rather than catastrophic or career-ending failure.

As a trainer, an educated decision must be made when choosing the appropriate training activity for a client. Really, this can be said for just about anything that is undertaken. Common sense and comprehensive education, coupled with a thorough needs and physical analysis and detailed screening is the trainer's first step in deciding if weightlifting is in fact relevant for the client. Following the right progressions, building a solid functional strength base and developing a sound general readiness for the activity, all with an effective and progressive coaching strategy, will be the second step in minimising the overall risks in this case. Take the time, learn the skills and develop the strength and stability, and weightlifting can be enjoyed by one and all.

THE OLYMPIC LIFTS

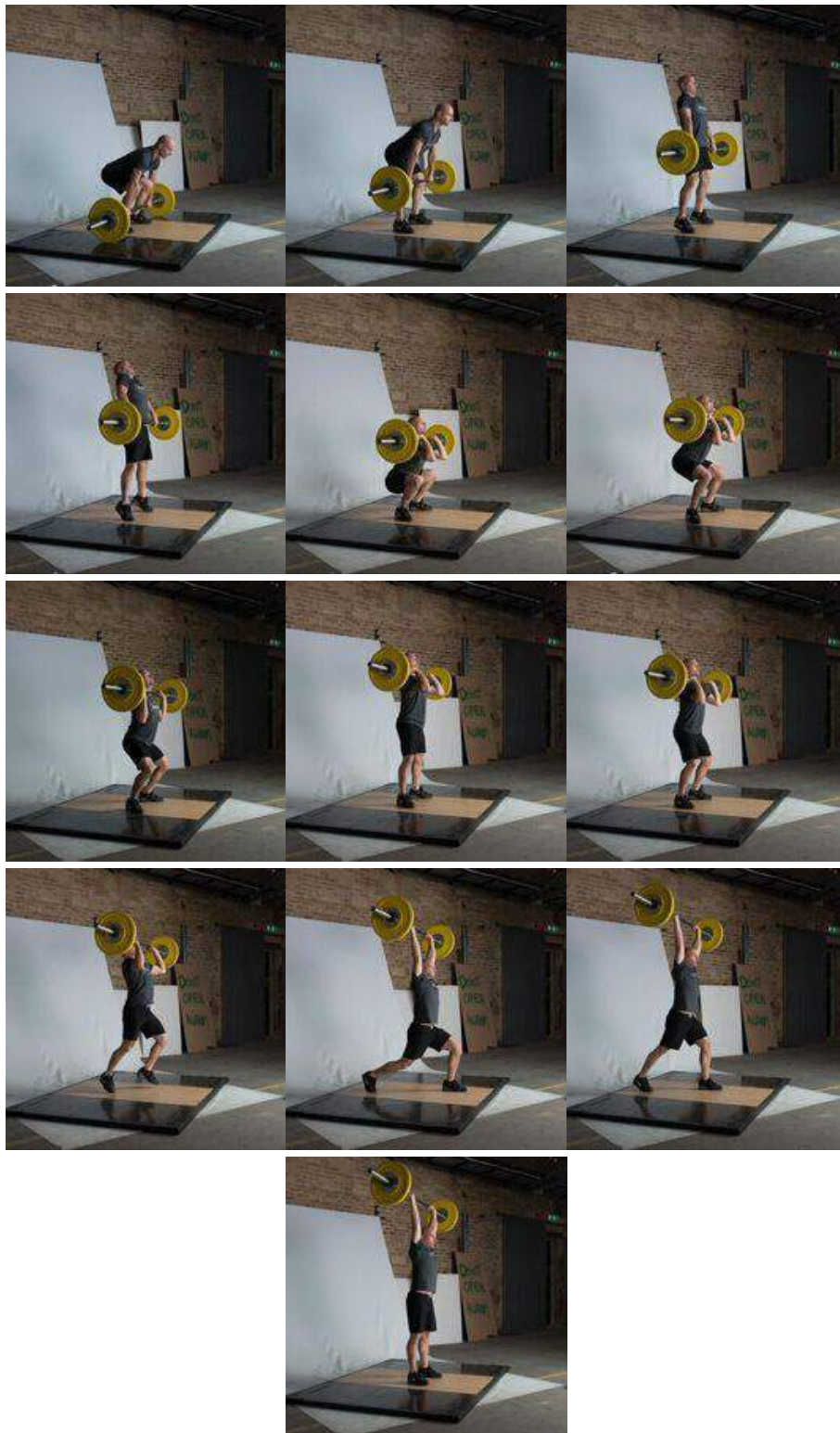
THE SNATCH



The snatch entails pulling the barbell (with a very wide grip) from the floor, overhead without pressing out the arms. It is a very precise lift that can be nullified by a lack of balance and timing of the lifter or client. The Snatch is by far the more advanced and technical of the two Olympic lifts. Essentially, it is one explosive movement in which you pull the weighted barbell off the ground, and then drop under it to catch the bar, holding it in an overhead squat position then rising up into a stable standing position.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

THE CLEAN AND JERK



The clean and jerk is actually a combination of two separate lifts that together make up one Olympic lift. The clean involves a narrower grip, pulling the weight off the ground and dropping below it in a squat to “catch” the weight at your shoulders, then rising up to standing. Once standing, the jerk is initiated, pushing the bar overhead whilst in a fast lunge position, and then completing the lift by bringing the feet together.

THE RULES

In competition, each weightlifter receives three attempts to lift as much weight as he or she can in both the snatch and the clean and jerk. The snatch is contested first, followed by the clean and jerk, with a break in between. Three judges assess whether the lifts have been successful as per the technical rules associated with both of the lifts, giving a white light for a successful lift, and a red light for a no lift, with a majority rules system in play.

The judges follow strict guidelines for each of the lifts, which are defined and outlined by the governing body of the sport. The rules for the Snatch and Clean and Jerk are outlined below, which are taken from the International Weightlifting Federation rules and regulations guide, the governing body for the international sport of Olympic Weightlifting.

The Snatch:

The barbell is centred horizontally on the competition platform. The athlete takes the start position in front of the barbell by grabbing the barbell and bending at the knees. The barbell is gripped, palms downward and pulled in a single movement from the platform to the full extent of both arms above the head, while either splitting or bending the legs. During this continuous movement upward the barbell remains close to the body and may slide along the thighs. No part of the body other than the feet may touch the platform during the execution of the Snatch. The athlete may recover in his/her own time, either from a split or a squat position. The lifted weight must be maintained in the final motionless position, with both arms and legs fully extended and feet on the same line and parallel to the plane of the trunk and the barbell. The athlete waits for the Referees' signal to replace the barbell on the competition platform. The Referees give the signal to lower the barbell as soon as the athlete becomes motionless in all parts of the body¹⁰.

The Clean and Jerk:

The barbell is centred horizontally on the centre of the competition platform. The athlete takes the start position in front of the barbell by grabbing the barbell and bending at the knees. The barbell is gripped, palms downwards and pulled in a single movement from the platform to the shoulders, while either splitting or bending the legs. During this continuous movement upward the barbell remains close to the body and the barbell may slide along the thighs. The barbell must not touch the

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

chest before it stops at the final position either on the clavicles, chest or on fully bent arms. The athlete's feet must return to the same line and the legs must be fully extended before starting the Jerk. No part of the body other than the feet may touch the platform during the execution of the Clean. The athlete may recover in his/her own time and must finish with the feet on the same line and parallel to the plane of the trunk and the barbell. The athlete must become motionless after the Clean and before starting the Jerk. The athlete bends and extends the legs simultaneously as the arms move the barbell upward in one motion to the full extent of the arms. The athlete returns his/her feet to the same line parallel to the plane of the trunk and the barbell with his/her arms and legs fully extended. The athlete waits for the Referees' signal to replace the barbell on the competition platform¹¹.

Weightlifters compete in either a men's or women's category, separated with differing body weight divisions as per the gender. Below is a breakdown of the specific gender weight classes:

Men's weight classes: Women's weight classes:

- | | |
|-------------------|------------------|
| • 56 kg | • 48 kg |
| • 62 kg | • 53 kg |
| • 69 kg | • 58 kg |
| • 77 kg | • 63 kg |
| • 85 kg | • 69 kg |
| • 94 kg | • 75 kg |
| • 105 kg | • 75 kg and over |
| • 105 kg and over | |

Once the two lifts have been successfully contested, the maximum weight lifted for the snatch and the clean and jerk are tallied into a total.

Prizes are usually awarded to the lifters that have the highest individual weights lifted for the snatch and the clean and jerk, as well as the converted highest overall total, as per their divisions.

Olympic weightlifting uses a steel barbell with rotating sleeves which hold rubber-coated discs of different weights. Typically these weights are referred to as 'bumper plates', because of their rubber and droppable design. They weigh between 5 kg and 25 kg. These plates are secured to the bar using collars on each sleeve that weigh exactly 2.5 kg each. Lifters typically wear a one-piece, close-fitting leotard, and supportive yet specific weightlifting shoes.

OLYMPIC WEIGHTLIFTING CONSIDERATIONS



The face of the modern gym has changed quite considerably over the past 10 or so years, resulting in training areas opening up and becoming sparsely filled with some specific and particular equipment. Knowing what this means and how it ultimately affects members and clients is what really allows trainers to stand out in the crowd, and offer that next level of service for those members and clients.

Many of these new spaces will contain large steel cages, monkey bars, platforms made from rubber and wood as well as tracks for indoor sleds and big rubberised weight plates. Funnily enough though, weightlifting was once a fringe based activity and elitist sport, restricted to the dingiest corners of the urban sprawl. Now a days, much of these new and radical changes affecting the gym scape, focuses around functional training and weightlifting elements, bring weightlifting right to the forefront of activity and training. Once again, knowing what this means for you as a trainer ultimately gives you that winning edge.

The following section outlines the specific gear and equipment used for the sport and training of Olympic weightlifting, becoming far more common place across all facets of the commercial training market than you might think.

WEIGHTLIFTING EQUIPMENT

As with all specific forms of sport and activity, weightlifting has its own unique set of equipment and attire. From different types of barbells, weight plates, shoes and even lifting straps, understanding why and when you use these specific types of equipment will give greater understanding as to the kinds of benefits gained or lost from using this style of equipment. For example, lifting straps may seem like a great way to overload the body, but if you are struggling to hold onto the bar, then straps can be detrimental to your overall progression.

Always remember, the equipment being utilised should always be in good working condition. Barbells should be straight and the ends of the Olympic bar should rotate smoothly. Bars that do not meet these criteria may be suitable for squats or deadlifts but pose risks to lifter's elbows and wrists with exercises such as snatches and cleans.

Olympic Barbells



The principal requirement for any Olympic lifting program or competition is of course the barbell. There are many types of barbells, suited to all kinds of resistance and weight training. Weightlifting, and especially weightlifting performed at the elite level, requires something more specific, and competition bars must conform to strict specifications and certified standards. *Regulation weightlifting bars weigh 20 kg for the men, with a length of 2200 mm and a 28 mm diameter shaft¹². Women's bars are 15 kg in weight, 2010 mm long and have a shaft diameter of 25 mm. Both sets of bars have the same 1310 mm of distance between the sleeves¹³*, with smoothly rotating collars, usually containing high quality bearings to aid in rotation. This becomes exceedingly important as the weight and loading increase, because if the shaft isn't allowed to rotate during the lift, the lifter will struggle to balance and stabilise the bar into the rack or overhead position. Knurling patterns are also of importance in a solid weightlifting bar. Because of the dynamic nature of the movement, if knurling patterns are too coarse, then hands and thumbs can be torn and scraped up during repetitions and training sets. On the other hand, if patterns are too soft, then the lifter can struggle for grip during the movement, leading to problems further down the track. Finding the right balance in knurling and rotation is always the best bet, and this is where you will see huge differences in prices, too.

Of course the quality of the bar must also be considered, especially in terms of the overall training volume that the bar will be subjected to. Remember each and every drop of the barbell, especially from overhead, subjects that bar to tremendous impact forces, both to collars and bearings alike. Drop the bar unevenly, and those damaging forces become amplified. Naturally, the higher the quality of the barbell, the stronger the steel, collars and bearings that actually make up the bar, generally guaranteeing strength, resilience and overall durability in the long term.

Bumpers, Fractional and Technique Plates



Apart from the barbell the next serious consideration are the bumpers. Again, huge variation can be seen in terms of quality and expense. A bumper plate or weightlifting weight plate is a weighted, 450 mm diameter disc, constructed with a rubber surround. These discs are designed to be dropped, where the rubber acts to dissipate the destructive forces and noise. These plates are usually coloured according to their weight, designed for easy identification. The standard weights and colours are as follows:

- 25 kg red
- 20 kg blue
- 15 kg yellow
- 10 kg green

Other plates that are used are the smaller “fractional” plates or “change” plates, allowing for the incremental progression of training and competition loading. These plates are a fraction of the size of the larger bumpers, and come in weights of 5 kg, 2.5 kg, 2 kg, 1.5 kg, 1 kg and .5 kg. These plates are not designed for dropping.

Last on the list are technique plates. These are usually hard or resin moulded plates with the same 450 mm diameter as the bumpers. These are designed to replicate the size of the bumpers, but with far less weight, usually consisting of 5 kg and 2.5 kg plates, allowing lifters to train and practise without being overloaded. In many cases these plates can actually be dropped. However due to their hard design, lifters should refrain from doing so, to limit the damaging impact forces being directed into the barbell.

Lifting Platforms



Essentially the lifting platform is a dedicated space for practising and competing in Olympic lifting. It is hard, level, stable and free from hazards and obstructions. In competition, you are looking at a dedicated 4 m x 4 m, level and solid purpose-built floor that can be no more than 150 mm high. In training, you will see various sizes of flooring, usually consisting of a wooden centre with two rubber drop zones on the outside. The wooden centre provides a strong and stable surface for developing large amounts of power and force, while the rubber acts to minimise the destructive impacts from the repetitive drops. Without the rubber, bars' and plates' working lives are drastically reduced.

The big take-away from the platform, however, is its uncluttered nature. Lifting is performed here and nothing else, therefore it is also free from unnecessary hazards, and attention must be paid when the platform is occupied. Because even though the platform may be clear and unobstructed, lifters sometimes don't stick to their boundaries. It's not uncommon for a lifter to run off or wander about when trying to stabilise a weight. This is why spacing between platforms is very important and why the space surrounding the platform must also be clean. Stretching and warm-ups should not be conducted near other lifters lifting. On the same tangent, correct storage of plates and bars is also important. The platforms need to be clear of equipment when people are lifting. Surfaces are ideally level and need to be clear of slipping hazards, and attention must be paid at all times. Even lifters who are chalking up need to do so away from the platforms and away from other lifters training, to prevent collisions or accidents.

Barbell Collars



Collars are a specific clamp for securing the plates on the barbell. In competition, this is a 2.5 kg bulky device, that screws onto the barbell and also against the weight plates. In practice, collars can come in various designs. The main thing to watch, however, is making sure that the collars that you do use don't move around or allow the plates to move around. The collar needs to be secure and the plates need to be held in place, otherwise the barbell can become unbalanced. Beginners need the security of a balanced bar, so they can practise the skill of lifting without compensation or complication. Consider that collars are an important safety aspect, especially for beginners, and prevent plates from falling off bars as well.

Jerk Boxes or Blocks



Introducing range of motion over time can be the safest progression for any beginner. Instead of jumping to the full movements, beginners can be taken through ranges more appropriate to their level and range of mobility. This is where the boxes or blocks come in, providing a set and solid height to work from, without have to work directly from the floor. Jerk boxes or blocks are usually wooden or metal boxes or structures that allow weights to be dropped or started from them, allowing for form to be perfected without the stress of completing the full movement.

PERSONAL EQUIPMENT

Shoes



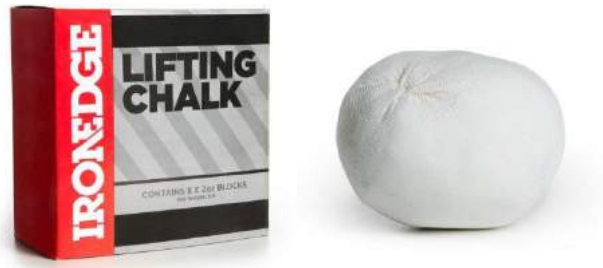
Shoes are generally designed with a specific purpose and goal in mind. Major companies devote millions of dollars to technology and design in these specific areas. It is easy to understand why you wouldn't run a marathon in football cleats. Weightlifting, both as a sport and training protocol, is no different. Specific heeled weightlifting shoes can be worn during training and competition. These provide stability to the lifter with their solid sole and heeled design. The raised heel of the shoe helps the lifter maintain an upright torso while catching the bar and also allows for deeper squat mechanics in the bottom of the clean and snatch. Weightlifting shoes are also typically constructed with one or two metatarsal straps that tighten across the foot and lock it down and solidly in place. Really, the weightlifter's shoe is all about stability, mechanics and force transfer.

Straps



There can be much debate around the use of straps, but the more you understand their role, the more you can objectively view their use. Straps are a grip aid, they allow you to hold onto the bar more effectively, without worrying about grip strength and fatigue. This can be a double-edged sword. On one hand it allows you to lift heavy without worry, or focus on leg power and development. On the other hand, if you can't hold onto a weight, then you can't expect to lift it, and competition doesn't allow the use of straps. With careful application and programming, you can alternate the use of straps during training, helping to break through training plateaus and barriers. Remember, this is just a training tool. Heavy reliance on it will cause associated problems down the track, especially in terms of grip strength, but if your client isn't an Olympic lifter, then there are other questions you need to ask.

Chalk



Chalk is a very handy tool in the weight room, so long as the gym allows its use. By rubbing it into the hands, it simply keeps those hands dry and increases your grip and ability to hold onto the bar. This can be especially important during those hot and sweaty sessions, where the ability to hold onto the bar can be drastically reduced. Chalk also provides protection against friction, and will help minimise the wear on the hands during repetitive lifts.

Tape



Tape can be a simple way to protect the hands, especially for beginners. Due to the nature of working with the hard barbell, hands can get callused and scuffed up. Because gloves aren't advised when lifting due to the reduction in proprioception that it presents, tape can be used to protect the sensitive areas, such as on the thumbs, minimising discomfort and pain.

Belts



Some weightlifters will wear lifting belts to increase intra-abdominal pressure for supporting and protecting the lower back. Understand though, the belt doesn't actually support the back, when used correctly it only increases tightness and rigidity of the mid-section that leads to spinal support. These should be avoided in beginners, so understanding and trunk engagement can be developed and learnt. As a result, lifters may become dependent on their lifting belts, as their trunk strength may not increase along with their leg strength, or their ability to get tight without the belt might become limited. If belts are worn, they should be thin at the back and no more than 12 cm in height. Also, be mindful of the thickness of the belt and the size of the buckle. Bar paths in the clean and snatch need to be kept as close to the body as possible. If a belt is too thick, the bar can potentially catch on the belt on the way through, disrupting timing and contributing to an unsuccessful lift.

GENERAL CONSIDERATIONS



Creating an effective training environment should be one of your primary goals as a trainer of weightlifting, and doing your best to minimise distraction so clients can

focus solely on their lifting is what you should aim for especially for beginners. Always be strict here and except no compromise, because discipline breeds focus, and focus breeds intent.

A lot of thoroughfare, peripheral movement and loud noise can distract beginners. In the same way that golfers and tennis players request silence before game play, weightlifters at an elite level often work in quiet environments, with mental visualisations of lifts a common tool. With this in mind, loud music, TV screens, mirrors, people exercising etc. may not be suitable. Distractions in the training area do not add to a professional training environment and do not allow lifters to focus on necessary technical cues. Really consider what this ultimately means for your client, and what this may mean in terms of teaching, progressing and complexity.

Good behaviour is non-negotiable among clients. Respect must be given to the sport and the lifter, otherwise the chance of injury will be drastically increased. Take charge, be aware and consider your environment.

First-aid kits should be readily available and easily accessible, as well as ice available for early injury treatment. Disinfectant and cleaning tools are also often required to prevent contamination, because blood on the bar or floor from ripped calluses is not uncommon.

Clients should also avoid training alone or unsupervised, lest they become injured or start practising poor form. Also, ensure when clients are not lifting that they are aware and mindful of other lifters and the environment. Although weightlifting is a solo sport, lifting can really thrive in a team atmosphere, so long as there is a safe training environment, mindfulness, respect, encouragement and support.

Be diligent and disciplined with your training space. Aim to stay clear of the lifting platform or keep at least a meters distance from the barbell and lifter at all times. Make sure others are aware of the lifter, and prevent anyone from wondering into the vicinity of the training space. And never store weight plates, objects or items on the platform or in the training space either, as this can create unwanted hazards.

SAFETY GUIDELINES AND CONSIDERATIONS

As with all forms of training and exercise, safety and technique should be the primary focus and concern of any exercise program or regime. By establishing strong ethics and adherence to the quality of training and the practice of skills, not only will clients obtain amazing results, but you will drastically enhance safety in the session and minimise the risk of injury.

Below is a list of guidelines that can be used as a reference or a check list, to ensure that clients can not only remain safe, but progress safely and effectively toward their chosen goal.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

- Always assess clients for their physical readiness to participate in weightlifting. Obtain appropriate health checks, training history and injury status, as well as using the *Adult Pre Exercise Screening System*, which is the preferred and best model for screening clients prior to exercise, or before deciding if weightlifting is appropriate for the individual. For more information on the Adult Pre Exercise Screening System, please refer to page 125.
- Ensure clients are screened and assessed for movement quality, limitation and/or restriction before considering adding load or progressing to more advanced lifts.
- Aim to restore range before considering load and always progress clients appropriately to their age and fitness level.
- Always ensure you have sufficient space when performing the Olympic lifts. Make sure platforms and training spaces are clear and free from any hazards, obstacles and other people.
- Ensure you use the right equipment for weightlifting, otherwise major problems can occur. Equipment can be damaged and floors destroyed, as well as posing additional risks to the lifter. Aim to lift on an approved lifting platform that can handle the drops from the barbell and bumper plates. Standard weight plates and solid weight plates should never be used.
- Make sure collars are tight and weight plates are secure before each and every lift, this will ensure the barbell remains balanced, and ensure plates remain on the bar.
- Always check with facilities rules and regulations in regard to training and the dropping of bumper plates and bars. Many gyms are fine with these forms of activities, but always check to make sure.
- Pay close attention to your training environment. Ensure training spaces aren't slippery and people are completely aware of others and their immediate surroundings. When training in groups, always ensure there is ample working space between each person and platform.
- Always pay attention to form and technique when performing lifts and progressions. Olympic lifting is a highly technical sport and requires exceptional attention to detail. Take the time to learn and progress your clients accordingly. Never rush into lifting.
- Be strict; stop any exercise when technique breaks down. This will dramatically improve your acquisition of the practiced skill and strength adaptation, as well as reducing the overall risk of injury.
- Always build load and intensity progressively when introducing clients to Olympic lifting.

- If any given exercise induces pain... STOP! This will only cause you or your clients to move in compensatory ways. Seek professional advice if pain is experienced or persists. Never be afraid to refer out.
- Ensure breathing and bracing techniques are learnt and executed before progressing and lifting.
- Always inspect and maintain your lifting equipment, ensuring that it is all in perfect working and training order.
- Always wear appropriate footwear and attire when training.

EFFECTIVE COACHING STRATEGIES

Effective coaching requires communication, feedback and encouragement. People generally don't respond well to negativity, criticism or complicated technical jargon. They respond to precise, simple and quick information.

Frank L. Smoll and Ronald E. Smith conducted an extensive study by observing and evaluating the impact of various coaching and teaching methods between particular coaches and their athletes¹⁴. This study viewed more than 80,000 behaviours across 70 coaches with nearly 1000 athletes. From this study, Smoll and Smith concluded that athletes responded favourably and positively to three main types of communication from their coaches. The best methods that elicited the optimal outcome in the athletes were: positive feedback, corrective instruction and encouragement after a performance mistake and technical instruction with a moderate amount of general encouragement unrelated to performance quality. Although this almost seems like common sense, this study does highlight the importance of communication, but also the way in which we offer feedback to both our clients and athletes.

A simple formula that encompasses elements of the Smoll and Smith study, for providing effective feedback and constructive criticism for clients is as follows:

Three steps for effective feedback

- 1 – Simple positive praise: "Well done, great effort"
- 2 – Positive reinforcement: "Great alignment, good head position"
- 3 – Corrective reinforcer: "On the next rep, see if you can really push those knees out."

In contrast, Smoll and Smith found that athletes responded unfavourably to coaches who failed to notice or reinforce good performance efforts, criticised mistakes, or provided instruction after a mistake in a critical fashion.

We also have to be very mindful of the unspoken communication that can resonate quite loudly without any form of speech. This of course is known as nonverbal communication, and can add volumes to the way our message or instruction comes across to the individual or client. In fact, communication experts suggest that between 65% and 93% of the meaning of a message is conveyed through tone of voice and nonverbal behaviours¹⁵. As a trainer you can say a lot and communicate much without actually uttering a word. Whether it is a frown, a menacing point of the finger, a look of disbelief, a frustrated shake of the head, or a beaming smile, these are all methods of communication that can communicate much more than you can imagine or intend. In addition to the awareness of the words and vocabulary that we use, it is also essential that we become aware of our tones, expression and nonverbal behaviours so that we fully understand the messages that are being conveyed.

The six Cs are the rudimentary principles for good communication:

Clear – Ensure that the information is presented clearly.

Concise – Be concise, do not lose the message by being long-winded.

Correct – Be accurate, avoid giving misleading information.

Complete – Give all the information and not just part of it.

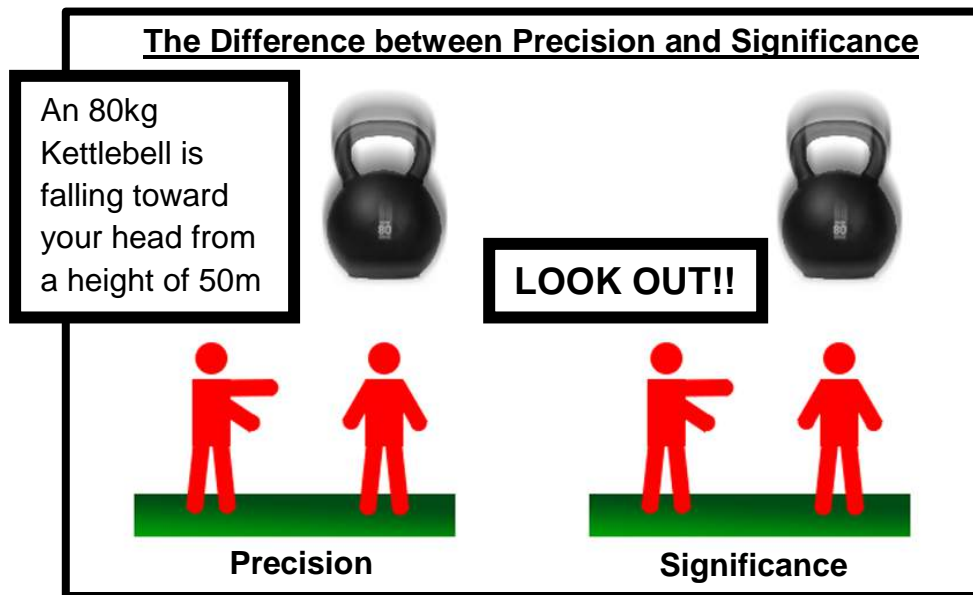
Courteous – Be polite and non-threatening, avoid conflict.

Constructive – Be positive, avoid being critical and negative.

Cueing, or the use of simple key words and phrases to guide, instruct and correct appropriate technique, is a learned and practiced art for trainers. In the world of Olympic weightlifting, movements and skills happen so fast, trainers really need to be on the ball, not only in terms of picking up the nature of faults, but in knowing which cues to correct those faults and when to use them. Knowing and understanding effective cueing techniques and specific corrective cues is truly worth its weight in gold, and can communicate reams of information, often within a simple word. The real trick is to use simple two- to three-word commands and phrases, to remind clients of key technical points. Also, take the time to communicate to your client the appropriate association with the chosen cue. After all, using cues like 'weight in heels', 'chest up' and 'crush the bar' will be wasted on clients who don't understand what they mean. Understand too, that what works for one may not work for another – people not only learn at different rates, but can be different styles of learners. Therefore, paying attention to how people respond to audio, visual and kinaesthetic cueing, will give greater insight into the types of cues that you may need to employ.

Key points for effective cueing:

- Use clear and simple, two- to three-word commands or phases.
- Cues can be auditory, visual or kinaesthetic in nature.
- Always account for the different styles of learner.



FAULTS AND CORRECTIONS

Faults and corrections is not an exact science, much trial and error will have to be used to diagnose and remedy the problems that lifters face. Remember, the more you understand the mechanisms and mechanics behind the key lift, the more awareness you will have when trying to fix the problems. Time will need to be taken, and much practice done to develop a true *coach's* eye for detail.

Olympic lifting is performed at tremendous speed, so don't be afraid to film each lift and slow it down so you can really gain some insight into what is happening. The more you can recognise the nature of the fault, the easier it will be come to apply the correct remedy.

Remember, safety and technique is paramount. Take time when teaching the progressions, build skill progressively, and really consider how you program the lifts. Never rush through for the sake of the task or the prescribed rep schemes, and really consider how and what you can implement to allow your client to excel.

Individual sections for correcting and fixing faults will be included after the supplemental lifts for each of the snatch, clean and jerk.

SCREENING AND MOVEMENT ASSESSMENT

Assessing a client's physical readiness before any given training program or exercise regime is the first place to start before any chosen activity, and Olympic weightlifting is no different. Naturally, all of the normal screens for performing any form of resistance exercise should be performed first (so your standard PAR-Q or Health Check form will usually be the first consideration).

Prior to getting started with Olympic lift training, some further physical pre-screening will be necessary to assist in ensuring clients reduce their chance of injury and maintain a steady progression throughout. Olympic lifting requires exceptional levels of not only strength and power, but mobility, flexibility and stability. Progressing someone too far too soon, or without qualifying them for the next progression, will only lead to problems, bad habits and potential injury.

The following tests and movement screens are a great place to start, and offer effective tools for qualifying clients for the rigorous activity of weightlifting. Also, never be afraid to refer to a healthcare professional, which can be very beneficial for both the client and yourself, especially when trying to reduce the risk of injury. A trainer should always refer a client out when there is pain experienced with any movement or activity, or if he or she is unsure about whether it is safe to progress a client any further with their programming.

MOVEMENT SCREENS

1) Neutral spine at varied hip angles.



a)



b)

Maintaining appropriate spinal alignment or holding a neutral spine (a) when squatting, deadlifting, hinging, overhead stabilising or pressing positions is absolutely critical. After all, being able to stack the head over the shoulders in line with the hips allows us to create strength and stability throughout the body, whilst minimising

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

shear and load stress to the joints and spine. No one should be picking up a barbell with a back that resembles anything like the photo on the right (b). Note how undue stress would be placed on the spine in a flexed position; increasing the weight would be a recipe for disaster. Ability to maintain neutral alignment is one of the reasons weightlifters have a low incidence of back injuries.

Neutral Spine Test



Purpose

- To test the body's ability to stay in a strong neutral position throughout the various phases of lifting.

Execution

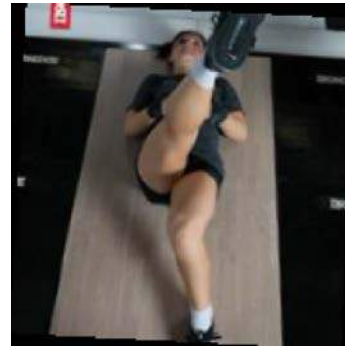
- Start in a tall standing position, with feet in a comfortable shoulder or hip width stance.
- Place a dowel rod on the back, lining it up with the back of the head, middle of the thoracic and the sacrum (1).
- Move the body into a deadlift position, pushing the hips back, and bending accordingly through the knees and ankles, maintaining the three points of contact (2).
- As the trainer, assess to see if there is any change to position, or if the natural lordosis or kyphosis of the body changes.

Notes:

2) Hamstring and pelvic stability



a)



b)

This test examines imbalance rather than range of motion in this sequence. The aim is to assess whether both legs have an equal amount of range and mobility (a), without compensations being made at the hips or lumbar spine. One leg with decreased range compared to the other is not desirable. It is also important to note if the hips twist when the leg is being raised (b). Either option is symptomatic of an imbalance in the sacroiliac region, meaning exercises that are taken from the floor could be problematic.

Leg Raise and Imbalance Test



Purpose

- Assess whether there are any asymmetrical differences between the left or right hip or leg.

Execution

- Lie on the ground in a supine position, aiming to preserve the natural curvature of the spine.
- Raise one knee, drawing the foot of that leg toward your hip to create a 90° bend in that knee.
- Keeping the other leg straight, raise the leg as far as you can whilst maintaining alignment and hip position.
- Perform this test on both legs, and assess any differences in terms of range of motion, spinal position and hip position including rotation.

Notes:

3) Shoulder flexion and Thoracic extension



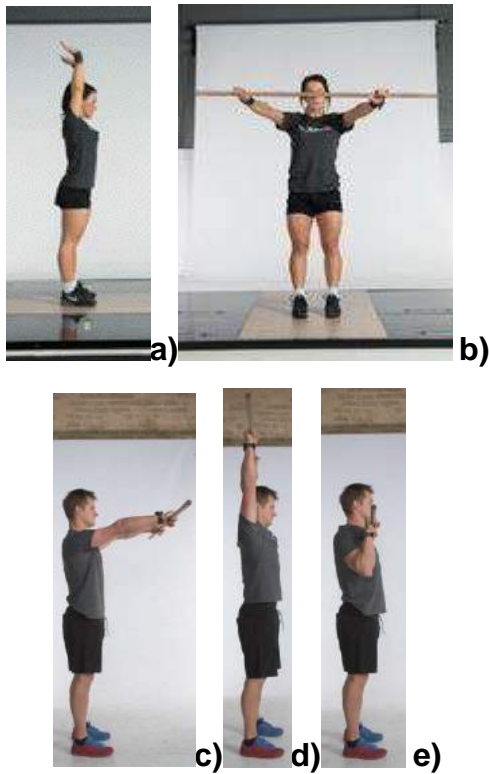
a)



b)

An inability to maintain locked arms whilst bringing the arms from hips to above the head (a) means any movement above the head like snatches or Jerks, will be problematic. A lumbar area that deviates in the outstretched position means flexibility in this position needs to be improved. In the same way that standing presses is an exercise often inappropriately prescribed in gymnasiums, not everyone can perform the more advanced Olympic movements until this issue is addressed with mobility exercises, stretching, SMR etc. Understand that structural issues in and around the shoulder can actually inhibit clients' abilities to achieve strong and stable postures. If this is the case, no amount of mobility or foam rolling will help, your best bet as a trainer is to refer the client out for an assessment.

Shoulder Flexion and Thoracic Extension Test



Execution

- Adopt a tall standing position, with your feet placed at shoulder width or at hip width.
- Maintain a strong neutral posture, and raise your arms straight overhead (a).
- Keep your elbows locked and aim to bring your arms in line with your ears.
- Use a dowel rod to hold on to replicate the bar, or as a tool to reinforce posture and the three points of contact (b, c & d).
- The Dowel can be raised by straight arms, or set specifically from the pressing position (e), and pressed overhead.

Purpose

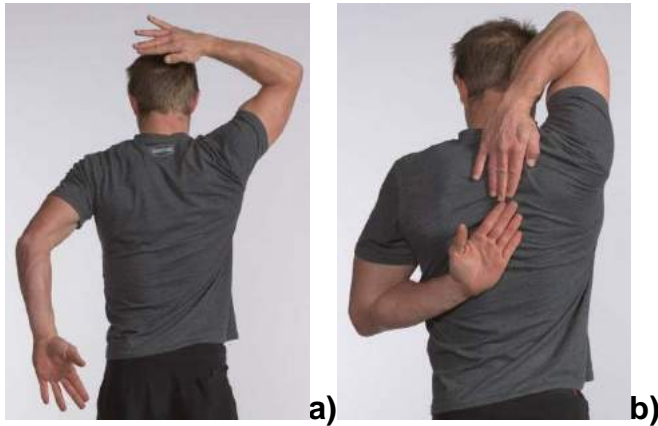
- To assess the range and stability of the shoulders when pressing and stabilising a barbell overhead.

Notes:

4) Shoulder Asymmetry and Impingement

These tests work together and follow one after the other, moving from the Apley's scratch test to the Impingement test. First is the Apley's scratch test, this is a very simple way to measure shoulder flexibility, and compare one side of the body to the other in terms of flexion and extension and internal and external rotation. Difference in arm lengths means it is not used to compare people, this test is of more relevance in terms of discrepancy and asymmetrical difference between the left and right arm.

Apley's Scratch Test



Purpose

- To assess imbalances and asymmetry between the left and right shoulder in terms of internal and external rotation, and flexion and extension.

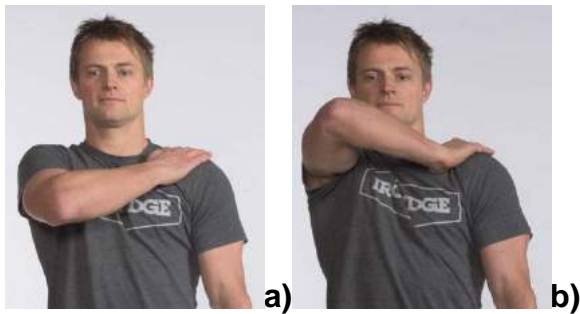
Execution

- Reach one arm up and slide your palm down your spine.
- Internally rotate the opposite arm and Slide the back of your hand up your spine towards the top hand.
- Measure the distance between the index fingers.
- Swap arms and perform again.
- Take note of the difference between the two sides.

Notes:

The second test in this series is a simple impingement test. Due to genetics, injury history and the nature of the shoulder, some individuals will be more prone to issues of impingement than others. Naturally, this is a must for any overhead work, and because both of the Olympic lifts require the bar to be finished in an overhead locked out position, these issues need to be picked up before any training is undertaken. If there is pain or this test is uncomfortable in anyway, always refer your client on to and appropriate health care professional to determine if this style of training is right for them. This test can also be used to check to flexibility or range discrepancies from one side of the body to the other.

Impingement Test



Purpose

- To screen for Subacromial impingement, and assess any asymmetrical difference from one shoulder to the other.

Execution

- Place your right hand onto your left shoulder.
- Gently lift your right elbow up as high as you can go.
- Make sure that your shoulders remain level, and that your posture doesn't change.
- Take note if you experience pain or discomfort when lifting and raising the arm.
- Take note of how high the elbow raises on that side.
- Swap arms and perform again on the other side.
- Take note if there are any differences between the two sides.

Notes:

MOVEMENT PREPARATION FOR OLYMPIC WEIGHTLIFTING

Correctly preparing the body for activity, is more than a requirement, it is a necessity. Olympic weightlifting can be extremely taxing on the body, both neurologically and physically. Therefore, correct and specific strategies must be structured and implemented before training can be undertaken.

Broader Terminology

Generally speaking, when a trainer says it's time to "warm up", it could denote some stretching and light activity before the training session. But if this is the case, this kind of approach may cause some issues in terms of progression and performance in an activity like weightlifting or other forms of activity or strength training.

Essentially, specificity doesn't just relate to the adaptations of a training stress, but can also relate to the way we prepare for the training stress. This is where the idea of *Movement Preparation* comes in, giving a broader name and definition for a specific purpose. This purpose should adequately prepare the body to the specific nature of the activity and training to come. By following a systematic approach, clients can effectively ready their mind and body, whilst practising and reinforcing skills, mobilising and lubricating joints, engaging the metabolic pathways, and increasing the overall core temperature and blood flow.

The Reason for a Specific Approach

Numerous studies have shown that particular methods of preparing for activity can illicit very different and varied results in the study groups. When it comes to Strength and Power training, methods can have a positive or negative impact on performance, depending on when and what methods are being used. Essentially, this reinforces the need for a more specific approach when preparing for exercise, especially in an activity as demanding as weightlifting. The following is a list of research examples, to help illustrate how specific methods can affect performance, and how they might affect weightlifting training.

1. The first example is a study that looked at the effects that static stretching had on strength performance and the natural levels of IGF-1 occurring in the blood. After 10 weeks of training, researchers concluded that all groups actually showed improvement. However, the training group that performed no stretching, before or after training, had more effective increases in muscular strength and natural IGF-1 levels³¹. If strength training is ultimately our goal, whether for weightlifting or resistance training in general, we have to understand that static stretching prior or during activity can actually impair or reduce our potential, for optimal muscular strength growth and development.
2. In a study designed to assess strength performance after an acute period of static stretching, 10 young adults underwent 30 minutes of maximally tolerable passive stretching before being tested. Researchers concluded that the prolonged stretching of a muscle, impaired the activation and contractile force, for up to an 1 hour after the performed stretching took place³².

Considering that weightlifting requires the client to produce large amounts of forces during training, it makes sense how statically stretching the muscle to increase flexibility, can actually hamper performance and our ability to produce that force, for the entire duration of that session.

3. Not to paint a completely evil picture of static stretching, this next study looked at the acute and chronic consequences of static stretching of training. Acutely, static stretching did enhance range of motion as part of the warm up, but can reduce peak force, force production and power output³³. Remember, these are all essential elements for successful weightlifting practice. From a chronic stand point, when not performed as part of the warm up, static stretching may have some injury reduction potential³³.
4. In contrast to static stretching, a study into the use of foam rolling and the use of Self Myofascial Release techniques on the hamstrings, found that the Roller provided significant increases to range of motion in the hamstrings, with no decrease to performance³⁴. This highlights a different strategy that can be utilized, giving the Trainer a perfect tool for improving joint mobility, without the detrimental effects that may result from stretching during the session.
5. Finally there is a comparison study between the effects of static stretching versus dynamic stretching on agility performance. Firstly, the study confirms the negative effect that static stretching has on agility, power and sprint performance. Secondly, dynamic stretching helped to create the greatest boost to performance in speed, power and agility³⁵, all components that we need for effective weightlifting training.
6. Lastly, which ties in how activations or specific exercises can impact performance, is a study that looked at the acute effect the depth jumps had on sprinting. Because activities can have an impact on performance, like depth jumps enhancing strength performance, when performed 4 minutes prior to a maximal squat³⁶, this study aimed to see how the depth jump affected a 20 meter sprint. In this example, researchers found that a protocol of dynamic stretching and 3 depth jumps, significantly improved sprint performance, when performed 1 minute prior to testing³⁷.

Movement Preparation

Essential elements to effective weightlifting movement preparation are:

- Soft tissue work and SMR
- Mobility drills and sequences
- Dynamic and ballistic stretching
- Energise the metabolic pathways
- Activating the central nervous system

- Skill practice and development
- Raise the core temperature
- Specific movement drills and skills work

A generalised strategy for implementing and effective Movement Preparation plan is:

- 1)** 1 to 3 minutes of soft tissue work done on the problem areas of the body, like the calf complex, anterior and medial hip as well as the middle thoracic.
- 2)** Generalised dynamic movement, moving from a joint by joint approach into more compound movements.
- 3)** Some generalised activity to get the heart and blood pumping.
- 4)** Specific activations, movement drills and skills work.

All in all, a structured movement preparation session should only take around 5 to 15 minutes, depending of course on the individual needs and time constraints of the client. Understand, due to the physical and neurological demands of Olympic lifting, time spent preparing and organising the body, will pay dividends towards development and progression.

THE SQUAT: THE KING OF EXERCISES

It is not uncommon for cleans to be introduced before snatches. This is due to the clean generally being relatively less difficult to learn than the snatch. Prior to either, however, squats need to be practised, trained and mastered. Really, this movement is the cornerstone or pillar to performance in all of the lifts, and trying to shortcut your clients without establishing strength and skill here will only cause problems further down the track.



Toddlers and kids do the best squats without even thinking about it.

In weightlifting, the squat really refers to a full range squat, where full flexion of the ankles, knees and hips are achieved, much like the picture of the toddler at play. The adherence of developing of this kind of range and strength in the squat really comes into play when catching the barbell in the clean and the snatch, because the lower you can go and the stronger you become, will allow for a greater load to be successfully caught and lifted. Of course this must be performed whilst preserving the integrity of the spine and maintaining head, thoracic and shoulder alignment, thus making the movement a total body exercise due to the overall activation and control the body requires. Initially, clients may need some work to achieve this position, before any load is considered. Make sure you never force a deep squat for the sake of depth, always preserve alignment and position during the movement, by going to a depth that still allows for a neutral and correct alignment. Naturally, practising with bodyweight variations is your first point of reference, working

mobilisation strategies into the routine to help facilitate range and movement. Developing an effective deep squat is a very important stage that should never be rushed or overlooked, and may require lots of practice, with or without load whilst utilising bracing and breathing techniques as well as practicing awareness and control drills. Remember, rigidity in the torso is essential, especially considering that your client will have to eventually support and stabilise the resistance of a loaded barbell.

The following are a number of ways that you can work on squatting technique, especially if squatting is proving difficult for your clients.

- 1) Squatting facing a broomstick that is held vertically in a location not too far from in front of the lifters standing position. The aim is to squat down and not allow the body to lean forward and touch the broom stick, keeping the body strong and upright. Standing close and squatting in front of a wall can also achieve the same outcome in terms of body position and awareness.
- 2) Downward dog or down face dog or similar yoga positions that promote a straight spine whilst hamstrings are being stretched and the ankle is being fully dorsiflexed. This is preferable to seated hamstring stretches, which can exacerbate flexion of the spine.
- 3) The weightlifter's stretch is a great way to mobilise the body. In the top position of the exercise, with the fingers locked under the toes, this gives you a way to stretch out the back and hamstrings. By dropping down and pulling on the front of the feet, you can actively pull and engage to straighten into a strong posture, and pull yourself down into the deepest position of the squat.
- 4) Squatting in Weightlifting specific shoes, raises the heel and allows for a deeper angle of the shin in the bottom of the squat. This deeper shin angle positions the hips closer and over the middle of the base of support, and allows for deeper squat mechanics and improved torso alignment. Understand though, this doesn't improve ankle dorsiflexion or mobility in the ankle, so if this is a problem area, work will still need to be performed to improve ankle range and flexibility. Weightlifting shoes are the preferred method of lifting the heel because they are designed to be solid and stable under load. Always be wary of chocking the heels of a client with objects when squatting, just in case it disrupts their balance or stability when performing the movement.
- 5) Goblet squats with a Kettlebell can be a great way to introduce a loaded squat variety to a beginner that can be loaded incrementally from 4kg upward. Goblet squats place the load in the front of the body, helping the torso to remain upright. The very bottom position of the squat can be held, where the weight of the Kettlebell can be used to pry the hips open and mobilise the hip adductors.

THE BACK SQUAT



The back squat is a staple exercise in weightlifting, and differs from some of the more commonly executed squats, e.g. low bar powerlifting squats, or half or partial squats that seem to be performed more commonly than most.

For weightlifting the back squat is a compound, full range, full-body exercise. The hamstrings, quadriceps and glutes are the 'prime movers', yet nearly every muscle of the core and torso must be engaged to maintain correct form and alignment - an important skill for all of the Olympic lifts. Back squats strengthen your posterior chain, as well as all of the muscles responsible for stabilising the torso. Add the barbell to the equation, and now the arms, grip and shoulders begin to work. Not only is it a fundamental exercise, but it becomes quite clear why the squat is such a tremendous strength-building exercise. Everything has to work together, in a unified fashion whilst traveling through a full and complete range, otherwise the whole movement breaks down very quickly.

Key technical points when performing the back squat:

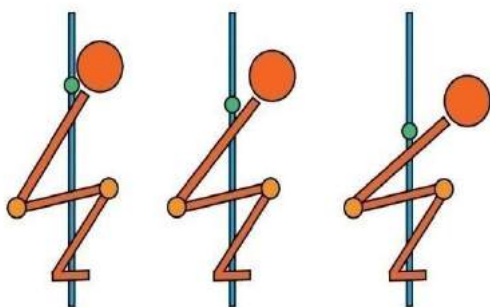
- Set up a barbell either in a rack or on squats stands, making sure the height of the bar is roughly the same height as your clavicle.
- Grab the bar with an even grip as close to the shoulders as possible
- Put your feet directly under the bar, get under it and put it as high on the traps as possible, above the spine of the scapula and away from the spine. This will enable you to remain as upright as possible during the squat.
- With your chest up, core engaged and upper back tight, stand straight with your knees and hips locked for maximum stability.
- Take a big diaphragmatic breath in, hold it, and squat. Aim to move the hips back and down as you bend your knees at the same time. Hips and knees should move as one, placing the weight evenly in the feet.
- Lower into the deepest position possible, whilst maintaining alignment, and keeping your knees pointed to where your feet are facing. Aim to sit your backside onto the back of your heels.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

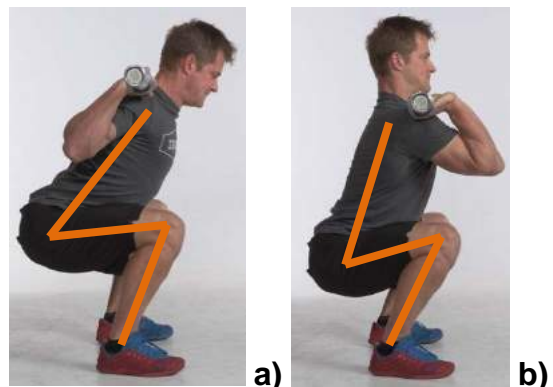
- Hold everything tight and switched on throughout the movement. Keep hold of your breath and quickly reverse the movement by driving your feet through the floor, extending the knees and raising your hips straight up.
- Keep your knees out, your chest up and your upper back tight.
- Exhalation during the last quarter of the ascent or at the completion of the movement is good practice so as to keep the stiffness in the body.
- Aim to finish in the same strong position you started in, with your chest up and upper back tight, standing straight with your knees and hips locked for maximum stability.

Front Squat vs Back Squat

Fundamental exercises like the back squat and the front squat will allow for the performance of the Olympic lifting movements with greater proficiency, however they do differ significantly in terms of application and specific benefits when compared to one another. Although both squatting varieties strengthen the body with a focus on lower body dominance, the front squat will also train strength and stability for catching and stabilising the barbell during the Clean and the Clean and Jerk. Apart from the weightlifting specificity, both squats will build full range strength in the body, taking the muscles of the lower body through their fullest range, improving mobility, particularly mobility under load, and transfers strength to many activities that require strength, power, and triple flexion and extension of the lower extremities^{38,39}.



Effects of barbell position on the Squat



Back Squat and Front Squat

The above diagrams illustrate the key differences that barbell placement can have in different variations of the squat. The one on the left (*Effects of barbell position on the Squat*) shows how moving the bar on the back can affect the overall angle of the body. Note that when the barbell is placed lower on the back, you require a deeper lean to the torso to maintain effective mechanics. Notice how this change effects the angles of the joints as well, increasing the overall range of motion to those areas.

The diagrams on the right show the differences between the back squat and front squat. (a) Shows the back squat and (b) shows the front squat. The major point to note here is not only is the upper body placed at different angles, but the angle of the knees and hips in both squats are also varied. This can give some great insight into what muscles are working harder or working over a greater range of motion than others. If the hips are taken through a deeper or fuller range than the knees, one can say that this creates hip dominance in the movement, because the hamstring and glutes are being taken through a greater range of motion than the quadriceps, as seen in an exercise like the deadlift. On the other hand, if the knees travel through a deeper range than the hips, as is the case with the front squat, the quadriceps end up working over a fuller and more complete range of motion, giving rise to more knee dominance. Generally speaking, depending on the length of torso, femur and tibia and fibula of the individual, high bar back squats can be quite balanced in terms of the muscular work that is performed by the Gluteal, Hamstring and Quadriceps groups. In the case of the front squat, greater stress is placed on the knee extensors and less on the hip extensors⁴², giving rise to quad dominance due to the upright torso and deeper knee angle.

THE FRONT SQUAT



The front squat is a very important exercise to master. Specifically, this is in keeping with a sound position when catching the bar in a clean, and can assist for catching the bar in the snatch. For example, the torso must remain upright and strong in both instances. Remember though, although the title of the last section refers to back squats being “versus” front squats, in weightlifting both are important to master.

The front squat has the bar resting on the front of the shoulders with the palms open, meaning that the upper body must be held more vertical to prevent the bar rolling off the shoulders and body. It works the upper body and the knee extensors more than the back squat, and less weight is lifted this way, although it's not uncommon for elite lifters to concentrate solely on the front squat. Aside from the importance of replicating the upright position of the clean, front squats emphasise the quadriceps well, especially vastus lateralis and the rectus femoris⁴³. One could argue that with a front squat involving less posterior chain work⁴², they could be inferior. Further to

that, given one lifts less weight with a front squat, and less weight can mean less in terms of overall force output, they may be deemed a less effective exercise. However, front squats decrease the torque that causes problems with the sacroiliac joint⁴² due to the upright torso, and have been shown to have significantly less compressive forces occurring at the knee than back squats⁴⁴. In any case, understanding the exact nature of an exercise in question will highlight its relevance in terms of future programming and application for the client. When it comes to weightlifting, the front squat is very specific to the clean, and possesses essential adaptations that relate back to weightlifting performance. To keep things simple, both variations have their place in weightlifting, aim to be strong at both and lifting success will be much easier to attain.

Key technical points when performing the front squats

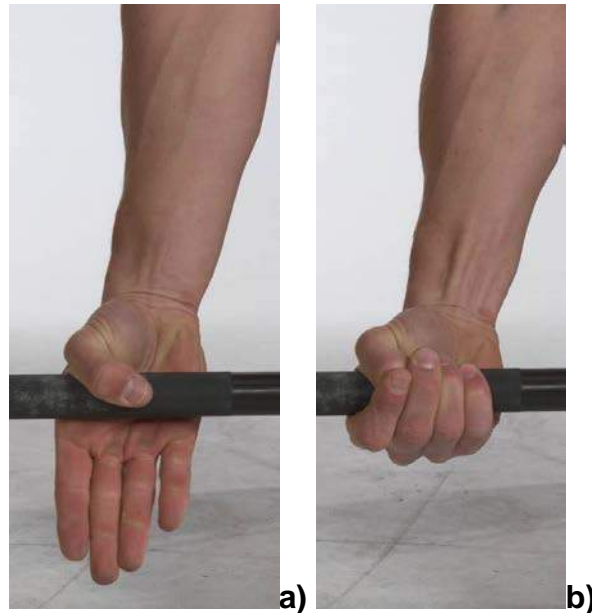
- Set up a barbell either in a rack or on squats stands, making sure the height of the bar is roughly the same height as your clavicle.
- Grab the bar outside of shoulder width. This may need to be wider depending on how the bar sits in the rack position.
- Rack the bar by pushing your elbows through and up, resting the bar on the anterior deltoids in an open-hand grip. Try to keep as many fingers under the bar as you can. Make sure there is space between your neck and the barbell.
- As you rack the bar, aim to stand directly under it.
- Stand up strong, making sure the weight of the barbell is still on the anterior deltoids, and your elbows are nice and high, don't let them drop.
- Take a big diaphragmatic breath in, hold it, and squat. Aim to move the hips back and down as you bend your knees at the same time. Hips and knees should move as one. Maintain that upright posture.
- Lower into the deepest position possible, whilst maintaining alignment, and keeping your knees pointed to where your feet are facing. Aim to sit on the back of your heels.
- Maintain that upright posture with your elbows raised.
- Don't stop, keep hold of your breath and quickly reverse the movement by driving your hips straight up.
- Keep your knees out, your chest up and your torso rigid and upright. Keep those elbows up.
- Exhaling during the last quarter of the ascent or at the completion of the movement is good practice.
- Aim to finish in the same strong position you started in, with your chest up and torso tight and straight, standing straight with your knees and hips locked for maximum stability.

THE HOOK GRIP



The hook grip is a specialist barbell gripping technique, designed to get as much gripping purchase around the barbell as you can, whilst preserving the pulling mechanics of both the clean and the snatch. This can be extremely effective, and a necessity for advancing effective cleaning and snatching form with any kind of heavy weight. Essentially, the hook grip allows you to get a full and complete grip around the bar that locks the thumb between your fingers and the bar, almost creating a wedge that prevents the bar from rolling out of the fingers. That being said, as you squeeze and hold on tighter with heavy loads, your thumb is basically jammed into the bar to create that effective wedge. This can be very painful and uncomfortable for many beginners, which can cause problems, inhibit speed and cause compensations until they get used to it.

Don't feel like you have to introduce this technique straight off the bat. Work the fundamentals first, using a conventional double overhand technique. When you do introduce the hook grip, using tape can really save the fingers and thumbs, minimising the overall discomfort with the grip.



Key technical points when performing the hook grip

- Locate your ideal hand space width, as per the snatch or the clean.
- Push the webbing of your thumb and index finger into the bar.
- Firstly, wrap your thumb around the barbell (a).
- Secondly, wrap your fingers around the bar, aiming to cover your thumb with your index and middle finger (b).
- Squeeze tightly and bring the thumb as far around the bar as you can with your fingers.

THE SNATCH



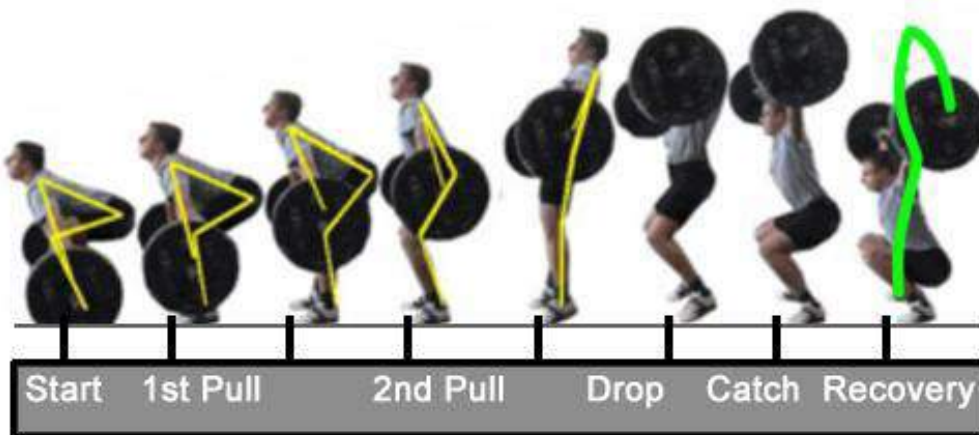
Of the two Olympic weightlifting movements, the snatch is arguably the more technical and difficult to perform. Due to its complexity, time must be taken and slow progressions made, not only to hone the skill, but also to forge the mobility, strength and stability that it requires.

The essence of the lift is to bring the barbell from the floor or platform up and into locked arms overhead in a smooth, quick and continuous movement. The lift requires not only great strength, but mastery of technical skills, a high degree of shoulder/back/leg flexibility, excellent balance, and speed. Not surprisingly, strength, speed and power are premium.

This lift requires coordination, torso (core) stability, and explosive power of the legs to generate the upward momentum required. Tremendous speed (and courage!) is required to get underneath the bar after the second pull.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

The following illustration shows the multiple phases of the snatch in motion, as well as a brief summary of what is happening during these phases.



Start	1 st Pull	2 nd Pull	Drop	Catch	Recovery
<ul style="list-style-type: none"> • Lock into a strong neutral position. • Bar over the mid-foot and in a comfortable stance. • Shoulders in front of the bar • Arms locked straight in a wide strong grip on the bar. 	<ul style="list-style-type: none"> • Hips and shoulders rise together. • Knees move backwards. • Body is held neutral and strong. • Arms locked straight. • The back angle remains the same as the start position. 	<ul style="list-style-type: none"> • Hips and Knees explosively extend. • Bar accelerates explosively and travels as high as possible. • Ankles, Knees and hips fully extend and the shoulders shrug upward. • Arms are still locked straight, aiming to pull the bar as high as possible. • The hips and bar meet, as the body travels upward and straight. 	<ul style="list-style-type: none"> • The bar travels upward due to the powerful extension of the 2nd pull. • Only now do the arms begin to bend. • As the feet lift from the floor, the arms pull aggressively on the bar. • The arms act to pull the body downward. • The arms rotate around the bar and straight into a strong overhead lockout. • The pull of the arms, coupled with the press of the lockout, pushes the body downward and into position. 	<ul style="list-style-type: none"> • The feet land in a strong squat stance. • With the arms held in a strong lockout, the body decelerates the now falling barbell. • The body tightens up to take the weight and stabilise the bar. • The body moves into a strong overhead squat position. • Weight stays even in the feet with arms lock out. 	<ul style="list-style-type: none"> • With the weight overhead and locked out, the body finds its balance. • Once stable, the lifter pushes their feet hard into the ground. • Arms maintain rigidity on the ascent, as the weight is kept even in the feet. • Lifter stands up strong and holds in a strong balanced position.

Notes:

The key technical points and phases when performing the snatch

Set or Start Position



Start with the bar on the ground, elevated so the bar's height is at least level with the middle of the shin. Olympic weightlifting plates or bumper plates are designed set the height of the barbell at the required level. The feet are set in a hip width stance, so the middle of the foot is directly under the barbell, this is to ensure the weight of the barbell is directly over the middle of the base of support. Grab the bar in the Snatch grip position, which is considerably wider than a conventional deadlift. To find the ideal position for you or your client you can use two separate methods.

Method 1 – Lean over the barbell, holding your upper arms directly over the top and parallel with the barbell, then let your hands hang down and bend your elbows to 90 degrees. Lower your chest down so you can grip the bar in that position. Hold on tight, lift your chest again and straighten your elbows. That's your Snatch grip.

Method 2 – Using a dowel rod or an empty barbell, stand up straight holding the rod in front of the hips. Balancing on one leg, lift the other leg toward the chest to create a 90 degree angle at the hip. At the same time, keep your arms straight and slide your hands outward on the rod. Aim to sit the rod or bar in the crease of the flexed hip, with your straight arms and your shoulders packed. This is also your Snatch grip.

The basic idea is that the barbell should be close to your pubic bone when you're standing straight up. Any narrower and you are going to have to bend your arms too early to elevate the bar. Grabbing the bar, take a big breath in, set the shoulders, lock the arms and lock into a strong neutral posture. Ensure the bar is on the shins, hips are higher than the knees and the shoulders are in front of the bar.

Notes:

1st Pull



During the first pull, the arms are locked straight and grip the bar tightly, whilst the torso and shoulder maintain a tight, strong alignment. The angle of the torso relative to the ground remains constant until the bar passes the knees. The hips, shoulders and bar move at the same pace. The bar is kept close to the legs, brushing them a little on the way up, ensuring proper alignment of the body and effective pulling mechanics. The focus during the first pull is to slowly accelerate from the floor, generating speed steadily as you rise whilst staying balanced, so the transition into the second pull can be seamless and explosive.

Notes:

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

2nd Pull



When the weight is at mid-thigh, the bar is accelerated upward by powerful hip extension until the body is fully erect. At this point, the bar and hips meet, as the body moves straight upward. Of course this is not to be confused with pushing the hips into the bar, or swinging the hips toward the bar (the bar needs to travel as straight as possible, too much contact here can result in a change of trajectory, making it exponentially harder to catch). This triple extension is done in conjunction with an explosive shrug when vertical or slightly behind vertical. This part of the lift is known as the “second pull”. Only once the lifter has reached full extension, shrugging the bar upward, do the arms finally bend.

Notes:

[illegible]

Drop Under or 3rd Pull



Due to the explosive nature of the lift and the power generated by the second pull, the bar will have gathered momentum, and will momentarily continue in an upward path. This is the time to dive and drop under the bar, while the bar is still traveling upward and weightless. Pulling aggressively with the arms and lifting the feet to stomp them into position, the lifter squats down quickly under the bar. The aim here is to shoot the arms up and straight into lockout, catching it overhead (the bar also has less height to travel if the body drops under at the same time). Understand, the pull of the arms here does not make the bar travel any higher, that is the sole job of the 2nd pull and explosive triple extension of the legs. Essentially, the bar stays as close to the body as possible, as the arms rotate around the bar and into very fast lockout. This lockout helps to create tension and pushes the body deeper and faster into position. Note, that once the arms lock out, the body puts the breaks on, it doesn't just fall into the squat.

Notes:

Catch



The barbell is caught with locked and straight arms overhead, as the body continues to move toward the bottom of an overhead squat, continuing to put the brakes on to decelerate the now falling bar. An active pushing of the arms will keep them straight, and establish high amounts of tension for stabilising and balancing the overhead squat. This is a difficult part of the lift for beginners; timing, balance and coordination need to work together for the lift to be successful. Any deviation to correct form and technique can spell disaster for catching the barbell, causing it to be lost in this final position. Take note, the heavier the weight the lower the bar will travel, forcing the lifter to catch it as low as possible. Even in the lowest possible position, tension and deceleration is used to prevent collapsing, so always aim to meet the bar in the strongest position possible.

Notes:

Recovery



The arms remained locked with the weight overhead as the lifter begins to stand up from the squat position. The lifter must also drive the feet hard into the ground and maintain a strong postural position when standing up.

Notes:

PROGRESSIONS AND SUPPLEMENTARY EXERCISES FOR THE SNATCH

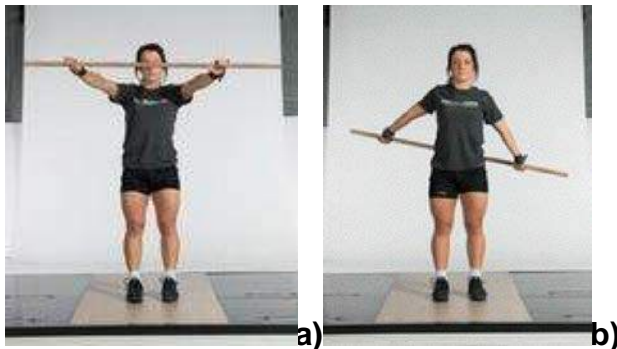
Due to the complexity of the snatch, it is common practice to break the movement down into parts, shaping and combining them with skills and drills to really develop all of the key points and techniques. The following exercises are beneficial as stepping stones and progressions to learning and teaching the full snatch.

Straight arm rotations

Known as Broomstick rotations, this shoulder exercises uses a dowel rod or a broomstick, and is a great way to open the chest, stretch out the lats and mobilise the scapular. Shoulder mobility and final position of the bar can be practised repeatedly with a broomstick or dowel rod as well.

Power Bands can also be used and allow you to mobilise very effectively, allowing the use of PNF protocols to get the most from your stretch. By slowing down through the point of stretch, you can push into the band and generate tension. This overloads the muscle proprioceptors, so as you relax, the muscle spindles release tension, and the band elastically stretches you slightly further. The more you relax, the more stretch you get.

1 - Broomstick Rotations



Execution

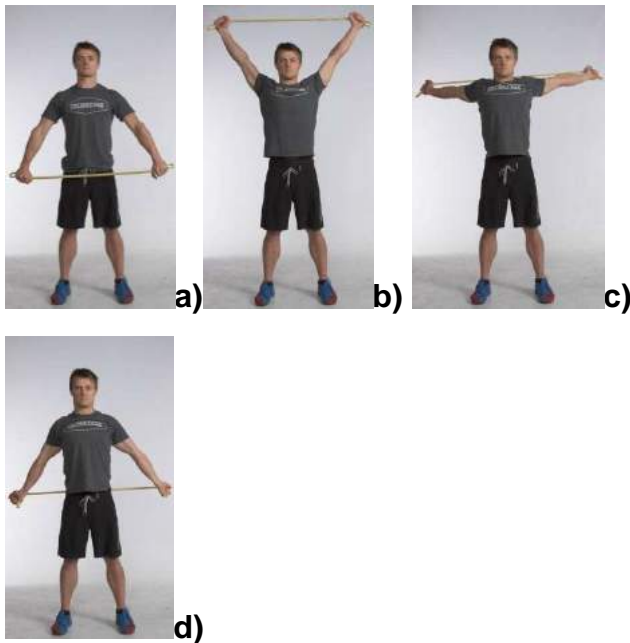
- Hold a dowel in the snatch position with arms straight.
- Maintain a strong postural position and adopt an ideal squat stance.
- With straight arms, rotate the arms backward, and bring the dowel all the way over till it touches you glutes.
- Loosen your grip to allow the dowel to move backwards.
- Widen your grip if you find the rotation too restrictive.
- Bring the dowel all the way back to the front again.

Purpose

- To stretch and dynamically mobilise the shoulders and thoracic spine.

Notes:

2 - Power Band Rotations



Execution

- Hold a Power Band in the snatch position with straight arms.
- Maintain a strong postural position and adopt an ideal squat stance.
- With straight arms, rotate the arms backward, and bring the power band all the way over till it touches your glutes.
- Slow down through the point of stretch. The more you relax the more the band will stretch you.
- Bring your hands closer together on the band in the start position for more stretch.
- Bring the Power Band all the way back to the front again.

Purpose

- To stretch and dynamically mobilise the shoulders and thoracic spine.
- Offers dynamic resistance for the individual to improve mobility.

Notes:

Overhead squat



The overhead squat is a primary prerequisite for the snatch, and can also be used as a screen to validate a client's readiness to perform the full movement. After all, a solid overhead squat is the bottom or receiving position of the snatch, so spending time developing strength here will pay dividends towards the snatch. Not only does the overhead squat build strength and stability throughout the whole body, it is a great mobilising exercise and it builds that all-important confidence for receiving or catching the bar overhead.

As a screen or movement preparation exercise, the overhead squat can be performed with a dowel, broomstick, power band or an empty bar. Remember, if this is the case, load is irrelevant. Mobilise and screen with the lightest weight that you can.

Overhead Squat



a)



b)

Purpose

- To specifically prepare and mobilise the catch position.
- To strengthen the body for the catch and receiving position.
- To develop balance and strength for the recovery.

Execution

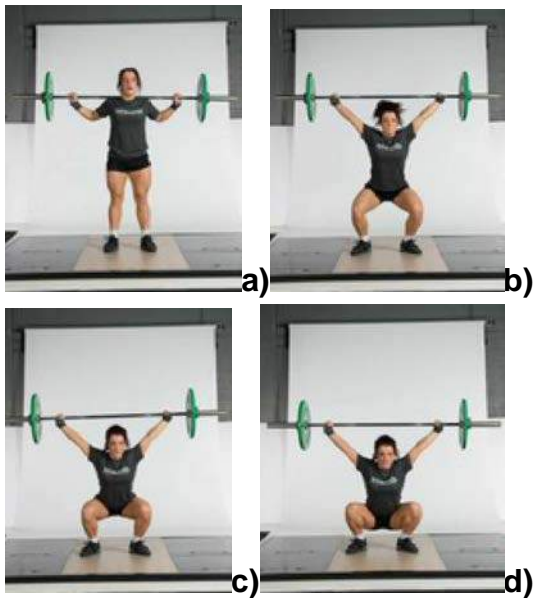
- Adopt an ideal squat stance for the overhead squat.
- Hold a dowel, power band or barbell in the snatch position with arms straight, overhead.
- Maintain a strong postural position, take a deep diaphragmatic breath in and create tension through the body.
- Lower the body by bending the knees and pulling down with your hips, keeping ideal posture and your weight even in your feet.
- Maintain balance and tension, locking the arms straight.
- Lower as deep as you can whilst maintaining perfect alignment.
- Pause and maintain tension, continuing to push your arms out straight.
- Drive your feet through the floor and ascend with balance and control.
- Stand up tall and straight.
- Exhale and maintain tension.

Notes:

Snatch balance

The snatch balance takes the overhead squat a giant leap in the right snatch direction. This assists with correcting imbalance in hips and back. It also builds confidence in sitting in the bottom position. Traditionally this movement is performed slowly, where balance and the sense of pressing under the bar becomes the focus.

Snatch Balance



Execution

- Start in a classic high bar back squat position.
- Widen your grip to suit an ideal snatch grip.
- With poise and control, aim to press the bar from the shoulders as you descend into an overhead squat.
- Continue to press and lower until the arms are locked out straight and you are sitting in the deepest squat position.
- Maintain control, balance and alignment.
- Maintain position, and stand up strong and straight.
- Aim to perform slowly and purposefully.

Purpose

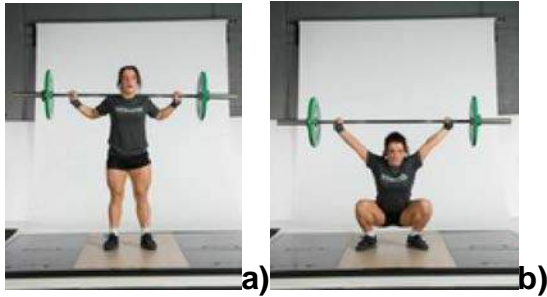
- To strengthen the mechanics of pushing against the bar whilst lowering under control.
- Teaches control and balance, and builds confidence for sitting in the bottom of the catch.

Notes:

Heave Pressing Snatch Balance

The heave pressing snatch balance helps introduce the lifter to the importance of dropping under the bar with speed and balance. A step up from the snatch balance, it still works the range of motion of the shoulders and hips and develops strength in the torso. This takes the snatch balance one step further by introducing speed and drive under the bar.

Heave Pressing snatch balance



Execution

- Start the same way as the Snatch balance.
- Dip slightly at the knees, and pop the bar off the shoulders with momentum.
- Punch the bar upward to lockout and drop under quickly at the same time. Push and drop.
- Think, push hard against the bar to accelerate the body downward.
- Really aim to lock and fixate the bar over head as you continue to drop.
- Decelerate the body with straight and locked arms.
- Aim for balance and control as you land in the deep squat position.
- Maintain position, and stand up strong and straight.

Purpose

- To practise the specifics, balance and control when catching the barbell.
- Teaches control and balance, and builds confidence for dropping under the bar and stabilising in the bottom of the catch.

Notes:

Snatch Pulls

Snatch Pulls allows a lifter to build the strength and power needed for a successful snatch. This lift also teaches lifters how to maintain the proper back angle off the floor and to feel a heavier weight than what they can do in the full movement.

Snatch Pulls



a) b)

c)

Execution

- Start in a strong snatch grip deadlift position.
- Take a big breath in, lock the arms straight and get the body tight.
- Push the feet through the floor and raise the bar upward with control.
- Once the bar reaches knee height, accelerate and explosively drive the body upward.
- Aim to fully extend your ankles, knees and hips, while keeping the arms locked straight and shrugging your shoulders toward your ears.
- Only once you have pulled the bar to complete extension, and the bar is traveling upward, will you bend your arms.
- Aim to drive the bar as high and as explosively as you can.

Purpose

- Builds strength and power for the 1st and 2nd pulls.
- Teaches timing and coordination for the pulling phases.
- Builds excellent power for triple extension.

Notes:

Straight Snatch

Works on eliminating the problem of the bar moving away from the body and the glutes unlocking from the bottom position first. The legs do not bend to catch the bar, making a pull of the bar close to the body very important. Note that the legs do not unlock to catch the bar.

Straight snatch



Purpose

- Builds timing and coordination for the snatch.
- Builds speed and power for the 2nd pull.
- Teaches the lifter to keep the bar path close and to punch and stabilise the bar overhead.

Execution

- Start in a strong snatch grip deadlift position.
- Push the feet through the floor and raise the bar upward with control.
- Once the bar reaches knee height, accelerate and explosively drive the body upward.
- Aim to fully extend your ankles, knees and hips, while keeping the arms locked straight and shrugging your shoulders toward your ears.
- Only once you have pulled the bar to complete extension, and the bar is traveling upward, will you bend your arms.
- Aim to drive the bar as high and as explosively as you can.
- Maintain an upright position and allow the bar to travel close to the body and straight upward.
- Pull the bar through and punch it out into a strong overhead position.

Notes:

Power Snatch

This lift assists with working on speed required during the Snatch, allowing the lifter to traditionally use with lighter weights. The lifter can also learn to quickly lockout the elbows, without significantly bending at the knees. This is a great beginner progression that still builds excellent power and speed through triple extension, without having to worry about performing a full overhead squat.

Power Snatch



Execution

- Start in a strong Snatch grip deadlift position.
- Push the feet through the floor and raise the bar upward with control.
- Aim to fully extend your ankles, knees and hips, while keeping the arms locked straight and shrugging your shoulders toward your ears.
- Only once you have pulled the bar to complete extension, and the bar is traveling upward, will you bend your arms.
- Aim to drive the bar as high and as explosively as you can.
- As the bar continues upward, pull yourself hard under the bar, dropping into the ideal squat stance.
- Pull the bar through and punch it out into a strong overhead quarter squat position.
- Aim to punch the bar straight as you stomp into position.

Purpose

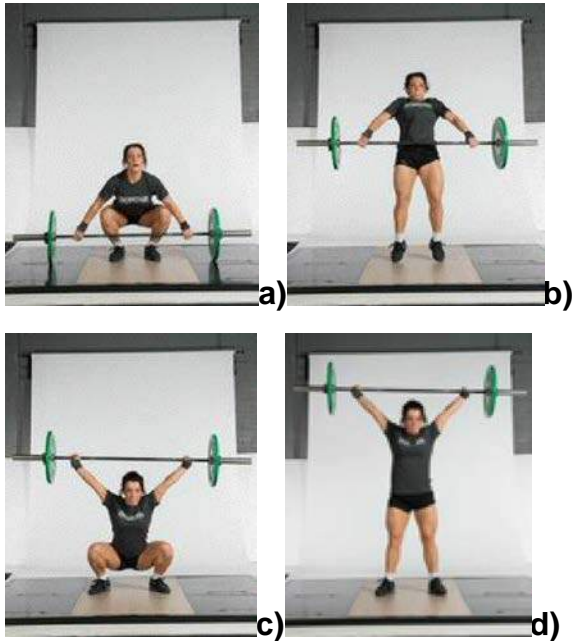
- Builds timing and coordination for the snatch.
- Teaches the fundamentals for dropping under the bar to catch it.
- Develops excellent power and speed through triple extension.

Notes:

Snatch

If the aforementioned are mastered, this challenging lift is satisfying to master. Each of the Snatch progressions builds pieces of this puzzle, ensure each one is mastered before moving to the next. The Snatch is an excellent builder of balance, coordination and power in a compound movement that offers metabolic and strength benefits.

Snatch



Purpose

- Develops excellent power and speed through triple extension.
- Offers tremendous benefit to strength and stability while supporting a weight overhead.
- Build excellent mobility and dynamic range of motion.

Execution

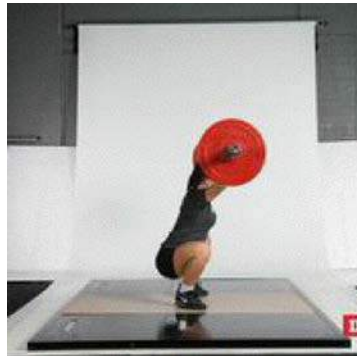
- Start in a strong Snatch grip deadlift position.
- Aim to fully extend your ankles, knees and hips, while keeping the arms locked straight and shrugging your shoulders toward your ears.
- Aim to drive the bar as high and as explosively as you can.
- As the bar continues upward, pull yourself hard under the bar, dropping into the ideal squat stance.
- Aim to keep the bar close to the body.
- Continue to drop punching the bar into lockout.
- Decelerate and slow the body down while keeping the arms straight
- Lower into a deep squat position and maintain balance and control.
- Once balanced, drive upwards, maintain form and position.
- Stand up strong and straight.

Notes:

FAULTS AND CORRECTIONS OF THE SNATCH

This section is dedicated to diagnosing and solving common faults in the snatch. Each fault has been identified as a common error that you will likely experience or witness. By identifying a potential problem, you can cross reference possible causes, apply the corrections and prescribe appropriate corrective exercises.

Fault: Bar finishes in front of the lifter



Common cause

- Arms may be bending early.
- Moving onto the toes too early or the trunk and legs do not straighten before the “second pull”.

Possible corrections

- Position the bar closer to the shin in the starting position.
- Keep elbows moving upwards towards the ears through pull.
- Relax arms at beginning, have faith and confidence in ability to increase speed through second phase as the bar travels past the knees.
- Stay on heels for as long as you can.

Corrective exercises

1. Snatch pulls – Aim to work on heavier weighted pulls. Ensure lifter’s technique hasn’t been compromised.
2. Low bar pulls – Pay attention to the initial starting position.
3. Straight snatches – Use the straight snatch to teach the importance of finishing the pull, and fully extending, without having to worry about dipping under to catch the bar.

Fault: Bar is lost behind the lifter



Common cause

- Arms bending too soon.
- Head thrown backwards.
- Placing weight in the heels too early.

Possible corrections

- Is the grip too narrow? This can cause the lifter to bounce the bar off the quads.
- Onto heels too early – balance work. Work on shrugging of bar with traps and shoulders only, feet to stay flat on ground.
- Complete snatch from different positions to work on keeping arms straight until post acceleration.

Corrective exercises

1. Straight snatches – Use the straight snatch to reteach full and complete extension.
2. Decelerated snatches – Use a three-phase pull from ground to near hips.
3. Heave pressing snatch balance.

Fault: Weak second pull



Common cause

- Weight too heavy.
- Poor second pull – weak through trunk and upper chain muscles (trapezius and deltoids lacking).
- Dropping under bar too early.

Possible corrections

- Reduce weight and work on finishing to full extension.
- Strength work may be required – more powerful legs and upper body.
- Ensure arms aren't bending before full extension of legs.
- Ensure lifter is on toes at shrug.

Corrective exercises

1. Snatch pulls from blocks – Concentrate on coordination from legs, hips to trunk and shoulders.
2. High pulls – Execute the high pull where the body ends in a vertical position and the bar has travelled with an explosive pull to ribcage.
3. Shrugs – Shrug the bar with a snatch grip. This will build strength in the potentially weak traps and shoulders.
4. Full snatches – Aim to pause at bottom to ensure pull has not been compromised at any stage.

Fault: Press out of arms



Common cause

- Bar may not be pulled to proper height.
- Lack of flexibility or mobility in shoulders or thoracic spine.
- Lack of mobility through the elbow or wrist.

Possible corrections

- Lifter is perhaps too keen to get under the bar, reduce weight and balance at bottom position.
- Remedial work to enable arms to adjust to full lockout position.
- Triceps work to full extension, and possibly eliminating exercises that involve bicep flexion.
- Remedial work to improve shoulder and trunk flexibility.

Corrective exercises

- Snatch balance.
- Snatches from hips (advanced exercise).

Fault: Lifter raises hips before the bar



Common cause

- Starting position may not be optimal for lifter's levers.
- An imbalance in leg strength from anterior to posterior.
- Flexibility may be lacking.
- Overanxious to complete lift.
- Overdeveloped upper body.
- Weak postural muscles.

Possible corrections

- Experiment with different starting positions. In the same way that someone with long legs may prefer a “low bar” back squat position, a taller client may benefit from a higher starting position.
- Increase width of hand position.
- Poor ankle/achilles issues affecting mobility a possibility, preventing proper starting position.

Corrective exercises

- Look for limiting ankle or hamstring mobility issues and use appropriate mobilisation and movement strategies for increasing range.
- Advanced bridging work to improve postural muscles.
- Use dowel rod along back as lifter works on lifting from starting position to standing. Increase weight only when the back ceases to alter angle.
- Practise the action of deadlifting repeatedly, with either snatch grip deadlifts or slow Snatch pulls, with or without weights. A strong lumbar thoracic region is also integral, so not being able to maintain this throughout the lift is a recipe for potential back issues. Lifting can be great for strengthening the back, so long as correct technique is maintained.

THE CLEAN



Even though the Olympic clean and jerk is contested as a single lift, the movement is in fact comprised of two separate parts, the clean *and* the jerk. Due to the segmentation of the lift and the stronger and more stable body position that it presents, significantly heavier weights can be lifted and contested.

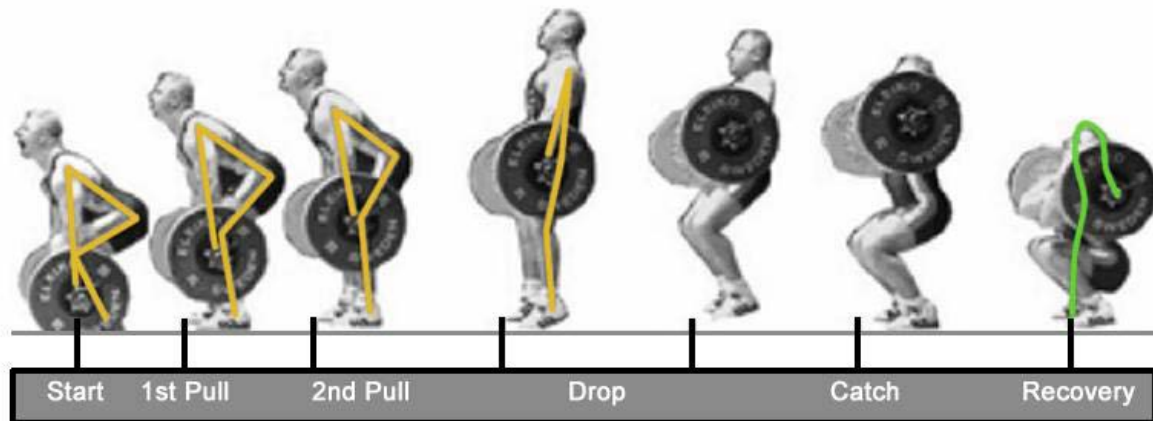
The clean is recognised as moving the barbell from the floor and powerfully bringing it into a position of support on the shoulders, commonly known as racking or front racking the bar. The jerk, on the other hand, is taking the bar from the rack position and powerfully driving the weight overhead in either a squat or split stance receiving position, then standing up strong and stable before returning it to the floor.

In this section we are going to focus on the clean. Of course, variations of the lift are very common in strength and conditioning programs for a number of reasons, all centred on the total body strength, power and speed that it develops, and the magnitude of weight that can be lifted. In terms of real-world application, the clean very effectively teaches us how to move a load from the floor, into a safe rackable position, for either carrying or moving to another position or location.

Aside from being metabolically challenging, the clean is a whole-body execution and an excellent lift for power development. This is mainly due to its effect on strengthening and creating powerful triple extension. Much the same as the snatch generates power through the extension of the ankles, knees and hips, the clean allows the use of even heavier weights, once again transferring strength to many athletic pursuits. This is why the clean is widely utilised for strength gains in many sports. It also improves balance, core strength and stability, as well as coordination and flexibility.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

The following illustration shows the multiple phases of the clean in motion.



Start	1 st Pull	2 nd Pull	Drop	Catch	Recovery
<ul style="list-style-type: none"> • Lock into a strong neutral position. • Bar over the mid-foot and in a comfortable stance. • Shoulders in front of the bar • Grip is such that the arms sit outside of the legs. • Arms locked strong and straight. 	<ul style="list-style-type: none"> • Hips and shoulders rise together. • Knees move backwards. • Body is neutral. • Arms locked straight. • Body is strong and neutral. 	<ul style="list-style-type: none"> • Hips and Knees explosively extend. • Bar accelerates explosively and travels as high as possible. • Ankles, Knees and hips fully extend and the shoulders shrug upward. • Arms are still locked straight. • Bar is pulled as high and as close as possible. 	<ul style="list-style-type: none"> • At the moment of full extension, the body dives under the bar. • The arms actively pull the body downward, accelerating it under the bar. • Bar stays close to the body. • Elbows shoot forward and up. • Feet begin to travel into position. • The body accelerates toward a deep squat position. 	<ul style="list-style-type: none"> • The feet land immediately in a strong squat stance. • Elbows rise as high as possible as the bar comes to rest on the anterior deltoid. • The body actively decelerates the weight of the bar. • The body tightens up to and moves into a deep front squat. • Weight stays even in the feet with elbows and chest up. 	<ul style="list-style-type: none"> • With the weight secured on the shoulders, the body finds its balance. • Once stable, the lifter pushes their feet hard into the ground. • The Body maintains rigidity on the ascent, as the weight is kept even in the feet. • Elbows and chest are kept upright. • Lifter stands up strong and holds in a strong balanced position.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

The key technical points and phases when performing the clean

Set or Start Position



Stand over barbell with balls of feet positioned under bar slightly wider apart than hip width. Squat down and grip the bar with a hook grip slightly wider than shoulder width. Your hips should be above your knees with your back straight, chest up, and eyes forward. Picking a spot in front of you can assist in maintaining a good position throughout the lift. Initiate the movement by taking a deep breath and lifting the bar off the floor. Keep the bar close to the shins with the chest over the bar.

Notes:

The 1st Pull



Pull bar up off floor by extending hips and knees. As bar reaches knees, vigorously raise shoulders while keeping barbell close to thighs. Speed increases as the lift progresses, the trick is maintaining control at the commencement of the lift and not trying to “jerk” at the bar from the ground. Having patience and allowing legs to do the work and ensuring that the upper torso remains constant will allow for a necessary increase in speed.

Notes:

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

The 2nd Pull

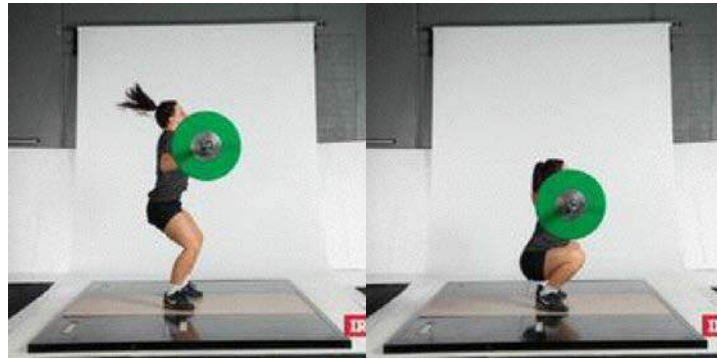


When the barbell passes mid-thigh, aggressively throw the hips forward, although the bar is still a straight trajectory. If you've heard advice akin to "bounce the bar off the thighs" – ignore that! Physics dictates that is a waste of energy... but I digress. Come up onto your toes, shrug your shoulders upwards, and pull the bar high, making sure to keep the bar as close to the torso as possible. Jump upwards, extending the body. Shrug the shoulders and pull the barbell upward with arms, keeping the bar close to the body.

Notes:

[illegible]

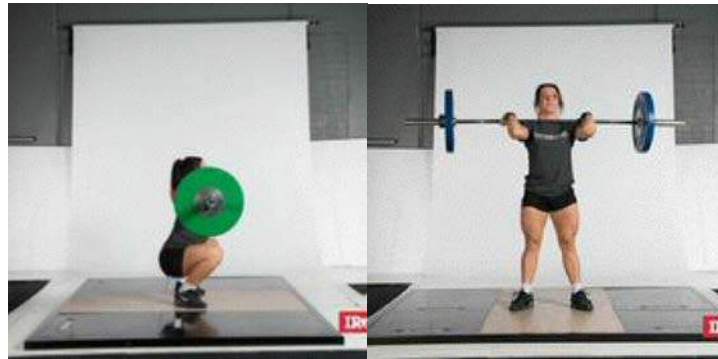
The Catch or Rack Position



At the very moment you reach full extension, you have to explosively reverse all of that upwards momentum. This is akin to diving under the bar, by lifting the feet from the floor and actively pulling the body down ward. The elbows bend and rotate forward, to allow you to Catch bar on shoulders while moving, yet decelerating into a squat position. The depth of the squat, and the catch, will be dictated by how heavy the weight is, and how high you can pull the barbell. Balance, timing and co-ordination are absolutely key.

Notes:

The Recovery



Once you hit the bottom of the squat, aim to stand up immediately. If a deep squat at the bottom of the clean is problematic due to a rounding of the back or it is uncomfortable at the wrists or shoulders, continue practising catching the bar higher in a power clean position and with a lighter weight, working on mobility exercises to increase depth over time.

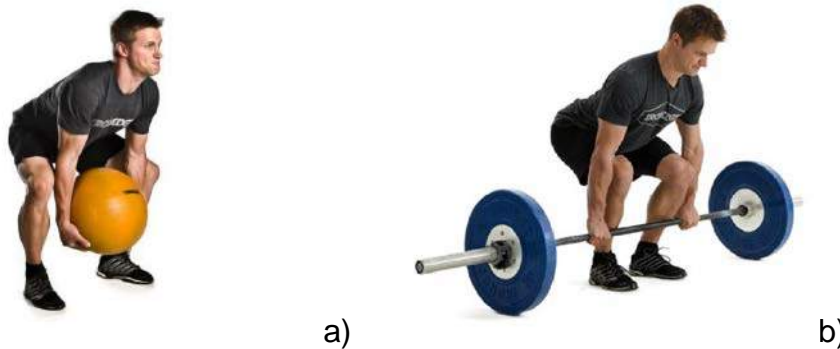
Notes:

PROGRESSIONS AND SUPPLEMENTARY EXERCISES FOR THE CLEAN

If the clean and jerk was attempted without any prior learning or training, it would become a very difficult if not dangerous exercise. Luckily, not only can we separate this lift into two components, but we can further break down the lift into manageable chunks for easier skill progression and development.

The following exercises are beneficial as a stepping stones to power cleans and then eventually moving to full cleans.

The Deadlift



The deadlift progression is essential when teaching the lifter to move an object from the floor to the hips. Correct sequencing masters the neutral spine and straight arms required for completing a successful clean. Initially, any object or implement (a) can be used and is acceptable, as this movement has to be done safely in order to become second nature. A common error for people introduced to lifting is to try and gain explosive movement straight from the ground, or trying to rip the weight from the floor. This all has to be slowed down, and it can be quite challenging to do so. Teaching lifts, especially deadlifts, to build up speed as the bar travels upward, needs to be the primary focus, especially for beginners. Deadlifts are a way of teaching patience and sound mechanics, but remember, strength and speed must not be the initial focus.

As beginners gain effective training and experience of how the deadlift operates, introducing the barbell is of course a necessity. The deadlift does come in all shapes and sizes. However, the deadlift for the clean (b), needs to be taught as the set up *for the clean*, and requires a certain level of specificity. The stance needs to be such that the arms can sit comfortably outside of the knees, and doesn't hinder the transition into the second pull. Grip needs to be in either a double overhand grip or hook grip. And for effective pulling mechanics, the shoulders must stay ahead of (or "over") the bar until the explosive shoulder shrug happens at the top. Sports like powerlifting require a different set of rules, for a different outcome.

The Deadlift



a)

Purpose

- To build strength and stability in the 1st pull.
- To build total body strength and coordination for the Clean.
- Teach the sound mechanics of the start position.

Execution

- Position your mid foot under the bar, in a hip width stance with feet nearly parallel to one another.
- Hip hinge down, so the shins make contact with the bar, the shoulders are in front of the bar, and the hips are higher than the knees.
- Set a strong neutral position, gripping the bar so the arms are outside the legs.
- Take a big diaphragmatic breath in.
- Squeeze the bar tightly and push your feet through the floor, raising the hip and shoulders at the same time.
- Once the bar is at knee height, stand up tall and strong.
- Breath out, maintaining a strong posture and position.
- Resist the temptation to explode off the floor, drive and extend with steady force, tension and strength.

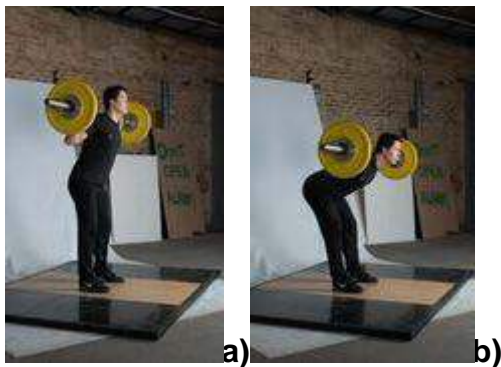
Notes:

The Good Morning



The good morning loads the hamstrings, glutes and back extensors, muscles that need to be strong in weightlifting. More advanced lifters also use good mornings as a way to enhance the second pull. The lifter controls the descent and accelerates the ascent, rising up onto the toes at the conclusion of the lift. No or minimal weight will obviously not load up the spine and activating the posterior chain muscles is a good activity at the start of a session.

The Good Morning



Execution

- Start in a classic high bar back squat position.
- Set your stance close to your deadlift position.
- Take a big diaphragmatic breath in and tighten up your neutral position.
- Push the hip backwards with soft knees.
- Maintain control, balance and alignment.
- Only go as deep as you can maintain good position.
- Stand up tall and straight, breathing out at the top.

Purpose

- To build strength and mobility in the glutes and hamstrings.
- Strengthens the posture and position needed for the various phases of the Clean.

Notes:

Front Squats



This teaches the lifter how to adopt a solid rack position for catching the clean, and sets the platform at the top of the movement for launching into a jerk. Aside from developing necessary leg strength, front squats teach lifters to maintain a strong upright torso and to elevate the elbows, preventing the weight from slipping forward. This mimics the deep squat position that lifters find themselves in when dealing with weight of a heavy clean.

For more information on the relevance of the front squat, refer to the “back squat vs front squat” section on pages 43 and 44.

The Front Squat



a)



b)

Execution

- Grab hold of the bar just outside shoulder width.
- Rotate your elbows under the bar, so that the bar rests on the anterior deltoid.
- Open your hand so that the bar sits in the fingers.
- In an ideal squat stance, take a big breath in, and create tension in a neutral position.
- Descend slowly and maintain good position and tension.
- Only go as deep as you can maintain good position.
- Stand up tall and straight, breathing out at the top.

Purpose

- To teach the fundamentals of the catch position in the Clean.
- Build strength and mobility required for an effective Clean.
- To teach effective and efficient squat mechanics.

Notes:

Mobility for the front rack

One of the biggest hurdles that clients will face when performing the front squat is of course getting the arms and wrists into the correct position. Often clients will be more than strong enough, but will lack the mobility required to secure the bar on the shoulders. The front rack requires wrist extension, external rotation of the shoulder and deep elbow flexion, all the while keeping the elbows high and the torso and shoulders stable.

Utilising the power bands once again, you can use a strategy that targets the often tight chest, and open up those internal rotators. Use the same protocols of PNF when using the band, taking it easy as you go, especially if you are tight.

1 – Rocking wrist stretch



a)



b)

Execution

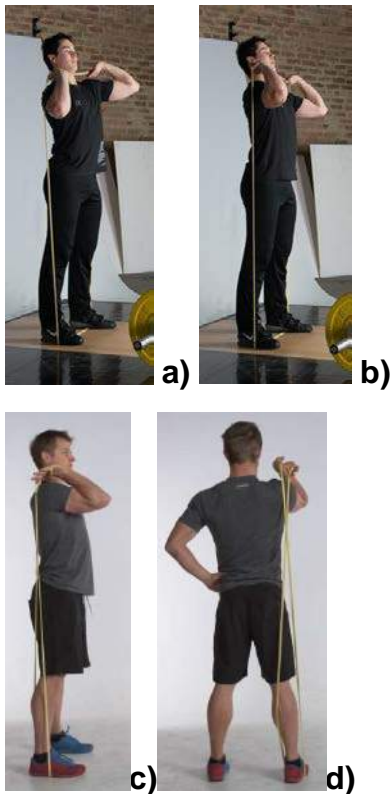
- Assume either a kneeling or deep squat position.
- Place your palms on the floor and externally rotate your arms so your fingers turn all the way round to face you.
- Lock your elbows straight.
- Gently rock backwards and forwards, aiming to bend only at the wrist.
- Use as much pressure as you need and take it nice and easy.
- Spend a solid minute oscillating gently backwards and forwards.

Purpose

- To improve flexibility in wrist extension and external rotation of the arm.

Notes:

2 – Banded front rack



Purpose

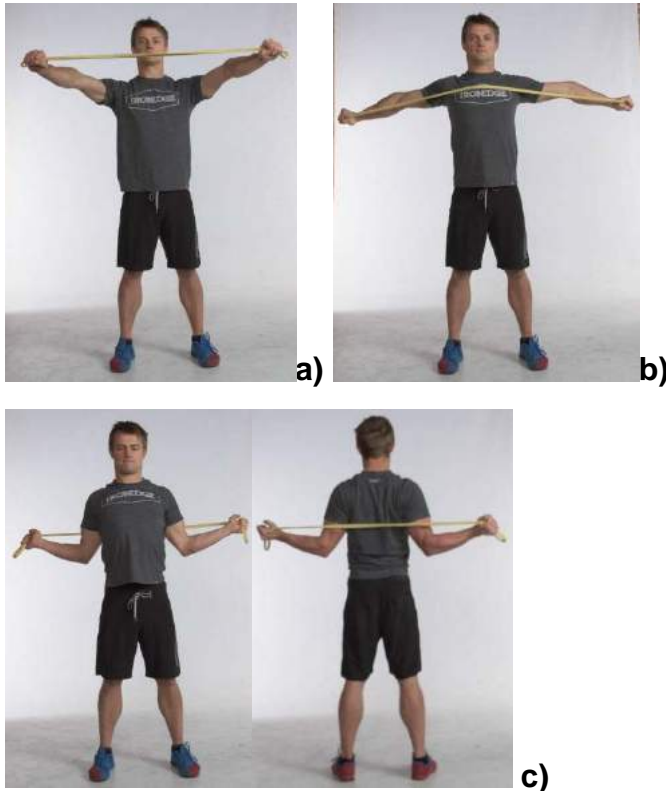
- To improve flexibility in wrist extension and external rotation of the arm.
- To mobilise the specific nature of the front rack.

Execution

- Grab a Power Band, and step into the loop in an ideal squat stance.
- Pull the band up, rotating your elbows through the loop to emulate the front rack position.
- Try shuffling the arms by lifting one elbow as high as you can then the other, alternating height of the elbows as you go.
- Alternatively, you can do one side at a time.
- Place the band around the right heel.
- Loop the other end around the right wrist, so the band runs over the fingers.
- Bring the band up and over the shoulder, placing the arm in a front rack position.
- Repeat on the other side.

Notes:

3 – Banded chest opener and external rotator



Execution

- Grab a Power Band and hold tightly onto each end.
- With straight arms, draw the band across the chest, aiming to retract the shoulders.
- Perform from a multitude of angles to target the back from different angles.
- In the second variation, bring your hands in slightly on the band.
- Reach the band over the head and bring it down the back.
- Bring the elbows down and into the body, opening the chest and externally rotating the arms.
- Try looping the band around an upright pillar and adopt the same position. By pinning the band further away from the body, it will apply greater force into external rotation.

Purpose

- Strengthens the middle back and stabilises the scapular.
- Open the chest and strengthens the posture.
- Stretches the internal rotators of the shoulder.

Notes:

High pulls from blocks



The high pull works the body's ability to produce powerful hip extension. This is not only a great introduction to the clean, it can also be used for sports performance or any activity that requires explosive hip strength and power. With the addition of the blocks, position and mechanics can be continuously monitored, because the height of the lift can be specifically and progressively controlled. This makes for a tremendously safe environment, especially for beginners. Naturally, by setting the box height lower, you increase the range of motion, activation and difficulty of the lift.

During the high pull, the arms are kept straight throughout. A shrug can be incorporated as an advanced version of the exercise, but only when this has been mastered. Adding a jump can continue the progression, teaching the trainee to raise high onto the toes.

High pulls from blocks



a)



b)



c)

Purpose

- Trains timing and powerful triple extension.

Execution

- Start on a high block, loading that part of the pulling phase.
- Set the body's position and neutral alignment from the height of the box.
- Squeeze tightly onto the bar with a Clean grip and straight arms, take a big breath in, and drive explosively upward.
- Aim for explosive full and complete extension, shrugging strongly at the top.
- Don't be afraid to jump with the bar to exaggerate the explosive extension.
- Keep arm locked and straight.
- As proficiency increases, lower the height of the box.

Notes:

Clean pulls from blocks



The clean pull takes the high pull one step further. The aim here is to drive the bar as high as you can, using timing and powerful extension. The real trick is in the timing, which is why blocks are used to control and allow the lifter to work through a safe and comfortable range for them. Everything else stays the same, strong neutral spine and full hip extension, head remains still, arms remain straight and hips do not rise faster than the shoulders. At the final moment, the arms are allowed to bend, nearly making it a two-phase movement. Aim for full extension, followed by a bending of the arms, and allow the bar to come up nice and high.

Remember, blocks can be used for a variety of starting positions and heights, and can be progressed from a higher start position down to a lower one as the lifter's proficiency grows.

Clean Pulls from Blocks



a)



b)

Execution

- Start on a high block, loading that part of the pulling phase.
- Perform the same as the high pull from blocks.
- Aim for explosive full and complete extension, shrugging strongly at the top.
- Only when you have reached the top of the movement will you bend the arms to allow the bar to travel higher.
- As proficiency increases, lower the height of the box.

Purpose

- Trains timing and powerful triple extension.
- Focuses on strength and skill development for various phases of the pull.

Notes:

Clean pulls



Clean pulls accentuate the main source of acceleration for the clean, and prepare the lifter for taking the barbell from the floor. Remember, as with all lifts, timing and precision is everything. As the bar approaches the mid-thigh position, begin extending through the hips, using speed to move the bar upward. There should be no need to actively use the arms as a means of accelerating; the body should be extended and slightly behind at the top. This exercise allows lifters to develop strength and power with weight considerably greater than what they can actually clean.

Clean Pull



a)



b)

Execution

- Start in a strong deadlift position.
- Breathe and generate tightness, pushing your feet through the floor to initiate movement.
- Aim for explosive full and complete extension, shrugging strongly at the top.
- Drive the bar as high as you can, keeping the bar as close to the body as you can.
- Clean pulls can be performed with heavier weights than what can be Cleaned.

Purpose

- Trains timing and powerful triple extension.
- Chains and coordinates the 1st and 2nd pulls together.

Notes:

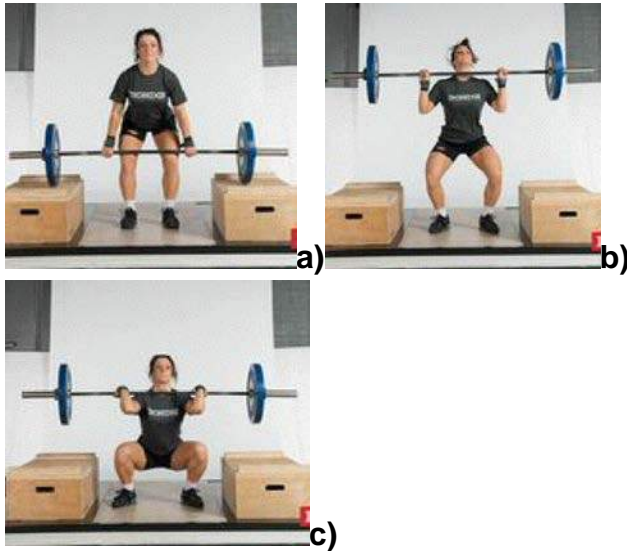
Cleans from blocks



Cleaning from the blocks is a chance to bring all of the pieces of the puzzle together, safely and with less stress. This exercise allows lifters to work on the rack position and a strong hip extension. Performing from the elevated height of a block reduces some of the strain on the lower back and removes one of the obstacles of working from the ground. The lifter can now concentrate on mastering the receiving position.

As the lifter becomes confident and proficient from the blocks, the height can be lowered. When the mechanics of the clean from the blocks are mastered, and all of the fundamentals of the lift are being adhered to, then cleans taken from the floor can be attempted.

Clean from Blocks



Execution

- Start the same as the High Pull from Blocks.
- Breathe and generate tightness, pushing your feet through the floor to initiate movement.
- Aim for explosive full and complete extension, shrugging strongly at the top.
- After full extension, drive under the bar, allowing the elbows to rotate forward, and catch the bar in the front rack.
- Control the descent, stay balanced, and keep your chest and elbows up.
- As proficiency increases, lower the height of the box.

Purpose

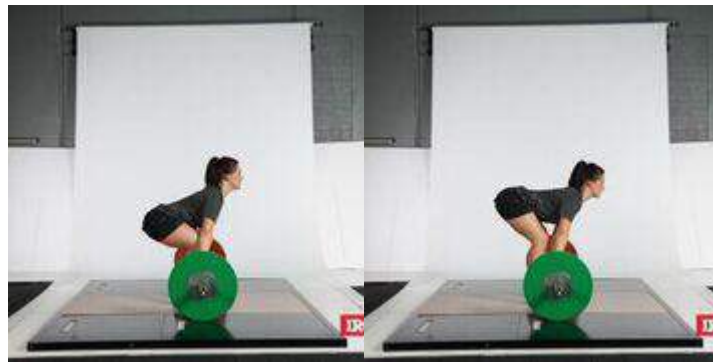
- Trains timing and powerful triple extension.
- Chains and coordinates the 1st and 2nd pulls together.

Notes:

Faults and Corrections of the Clean

This section is dedicated to diagnosing and solving common faults in the clean. Each fault has been identified as a common error that you will likely experience or witness. By identifying a potential problem, you can cross reference possible causes, identify the corrections and prescribe appropriate corrective exercises.

Fault: Lifter raises hips before bar is elevated



Common cause

- Sequence and timing may be off.
- Lifter too eager or is trying to rip the bar off the floor.
- Leg strength may be lacking.
- Limited flexibility or ankle range of motion.

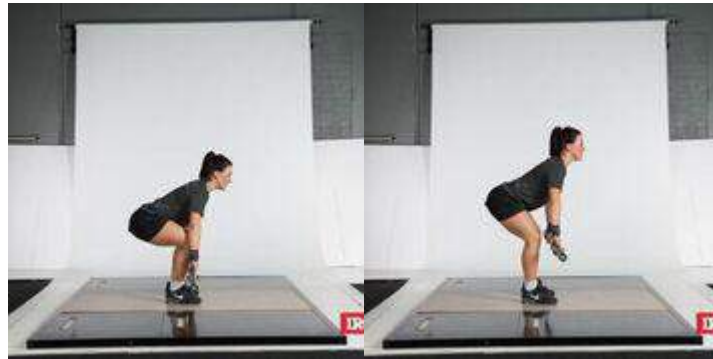
Possible corrections

- Aim to move the body together. Consider moving the bar by pushing feet through the floor as opposed to trying to lift the bar up.
- Aim to raise the shoulders and hip together.
- Visualise the back angle of the perfect deadlift. Don't change that angle as you lift. Wait until the bar reaches your knees before you stand up.

Corrective exercises

1. Revisit the deadlift – Ensure that the mechanics are sound, and the trainee understands the mechanics and start position.
2. Squats – Use squats to sequence the ankles, knees and hips working together, as well as strengthening the lower body for the movement.
3. Pulls from blocks – Use blocks to lessen the range of motion, cueing the use of the ankles, knees and hips moving together.
4. Ankle mobility exercises – Use some foam rolling and banded mobility for the ankle complex. Try using a heel lift or weightlifting shoe. Seek advice from a foot specialist.

Fault: Bar lifts or moves away from the shins



Common cause

- Start position is incorrect.
- Bar is uncomfortable on the shins.
- Weight shifts forward of the centre of gravity.
- Overextension of the knees during the initial pull.

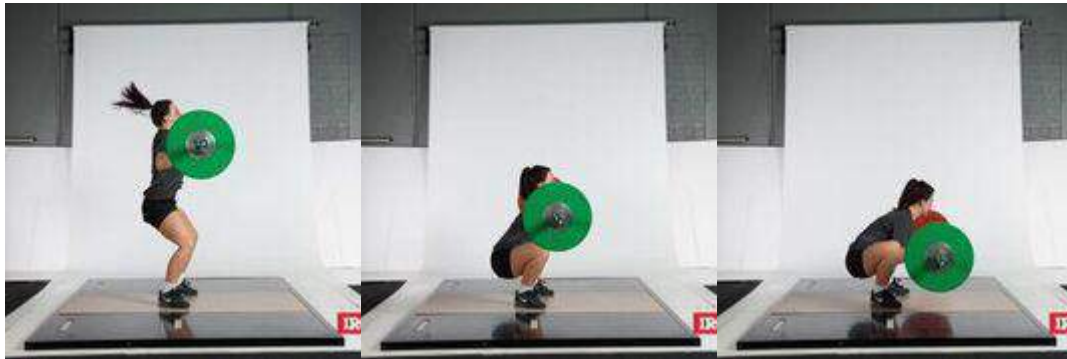
Possible corrections

- Aim to maintain contact with the bar on the body.
- Ensure that the start position is correct, and the bar has been set over the mid-foot, not the toes or the ball of the foot.
- Aim to keep even pressure in your feet when taking off, or slightly towards the heel.
- Wear long socks or sweat pants to alleviate discomfort.

Corrective exercises

1. Position the bar closer to the lifter and note that shins are not too inclined.
2. Practise set-up drills without lifting.
3. Revisit the deadlift – Ensure that the mechanics are sound, and the trainee understands the mechanics and start position.

Fault: Bar finishes forward of the ideal receiving position



Common cause

- Arms bend too early, or at any point prior to full extension.
- Elbows may externally rotate too early.
- The lifter may not straighten the trunk and finish full extension, wasting all hip drive.
- Lifter may be rising up on the toes too early.
- Lifter may be bouncing the bar off the hips.

Possible corrections

- Aim to complete full extension, and finish the second pull.
- Lock the elbows during the lift, or try to leave the bar behind as you lift.
- Stay grounded during the lift and keep solid contact with the floor.
- Try to move elbows in line with the torso throughout the second pull.
- Pull straight and true, like a rocket to the sky, and don't push your hips into the bar during the second pull.

Corrective exercises

1. Practise clean pulls from various heights, concentrating on a correct starting position, strong straight arms and full triple extension.
2. Revisit the cleans from the blocks, especially from a higher position, to teach the importance of finishing the second pull, both with straight arms and straight bar path.
3. Deadlifts with speed and shrugging with straight arms, attention to elbows that may require internal rotation and thus reduce bending too early

Fault: Bar bounces off the hips



Common cause

- Hips are pushed forward and into the bar, as opposed to extending and allowing the bar to reach the hips.
- Throwing the head back.
- Swinging the body into full extension instead of standing up straight.
- Head is thrown backwards.
- Poor coaching – the bar does not bounce off the hips!

Possible corrections

- Aim to stand up tall and straight through full extension.
- Lock arms into a strong straight position.
- Consider that when you perform a vertical jump the aim is to jump as high as you can to the sky. The same should be practised with the clean.

Corrective exercises

1. Practise high pulls from knee height.
2. Ensure that the start position is correct.
3. Reduce weight and work on power cleans, ensuring bar travels along the body.

Fault: Weak second pull



Common cause

- Weight is too heavy.
- Poor coordination through the entire extension phase.
- Arms could be bending too early.
- Raising up on the toes too early.
- Lifter may be tired and fatigued.

Possible corrections

- Lower the weight being used, and hone the skill without overloading the pattern.
- Lock arms into a strong straight position.
- Aim to pull strong and complete the second pull entirely.
- Keep your feet grounded throughout the initial phases of the lift.

Corrective exercises

1. Practise high pulls from various heights, focusing on full and complete extension.
2. Build strength in the deadlift first, before trying to add additional load to the clean.

Fault: Bar failing to be secured in the rack position



Common cause

- Torso or chest is collapsing during the catch or receiving phase.
- Lifter descending under the bar and not diving or pulling themselves under with intent.
- Bar isn't landed correctly onto the front of the shoulders, or the elbows not rising high enough.
- Poor core or trunk strength for maintaining rack stability.
- Lack of shoulder or thoracic mobility.
- Incorrect breathing and engagement being used.
- Bar hasn't been pulled high enough.

Possible corrections

- Aim to keep the chest and eyes up during the catch phase; resist the temptation to look down.
- Lower the weight being used, so that the racking technique can be practised.
- Retain that initial breath, hold and squeeze hard throughout the torso to maintain rigidity to prevent any collapse. Only breathe out when you reach the top.
- Lift and push those elbows upwards; resist the temptation to drop them.
- Feel the weight being supported by your anterior deltoid and front of the shoulder, not by the wrists or fingers.

Corrective exercises

1. Return to front squatting exercises, focusing on correct position and mechanics, to build strength and confidence for the catch.
2. Work cleans from the blocks, aiming to dive under the bar, lifting the torso, and keeping the elbows high.

3. Train bracing and trunk stability exercises for building stability for the front squat and clean.
4. Use mobility exercises as Movement Preparation, recovery and active recovery, to restore range to the wrists, elbow and shoulder, for the clean and front squat.

Fault: Elbows touch the knee in the bottom of the clean



Common cause

- Torso or chest collapses during the catch or receiving phase of the lift.
- Elbows dropping too far.
- Not descending fast enough to catch the bar.
- Bar not being pulled high enough due to a lack of extension in the second pull, or weight is too heavy.

Possible corrections

- Aim to pull yourself under the bar to catch it.
- Finish the second pull to full extension.
- Land the bar in the correct position, on the front of the shoulders.
- Keep your eyes, elbows and chest up in the catch.

Corrective exercises

1. Practise and build strength in the front squat, aiming for perfect mechanics and form.
2. Practise high pulls and cleans from various heights, to practise stability, position and speed under the bar.
3. Pausing in the initial catch position, stressing importance of sturdy, upright receiving position.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS

POINTS OF COMPARISON

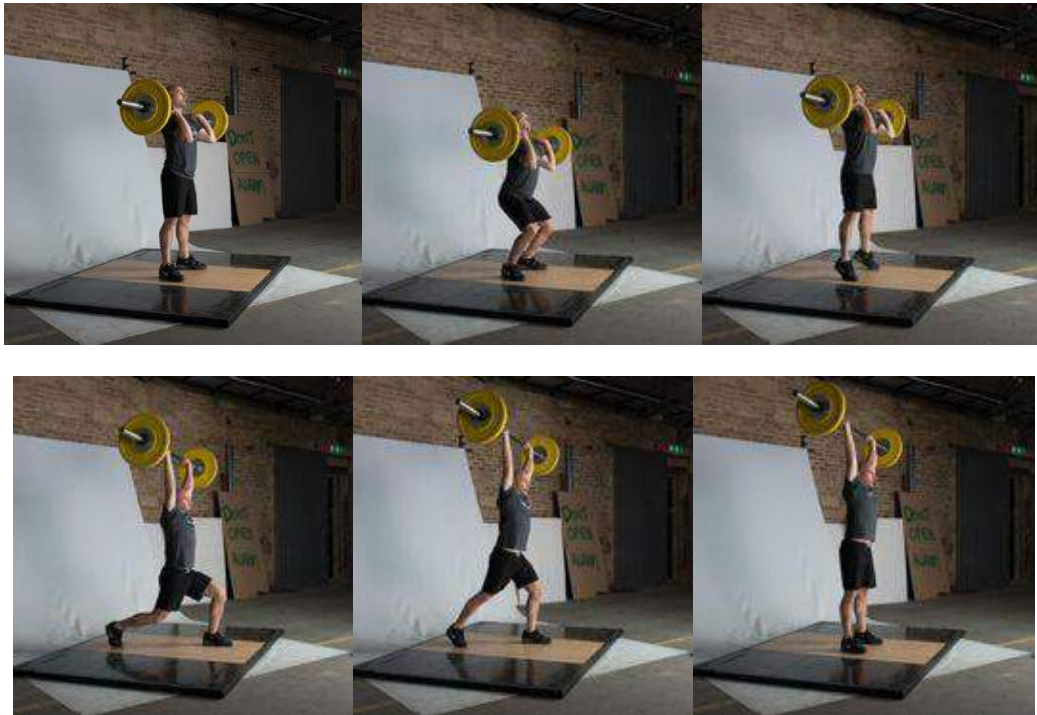


Photo curtesy of Sam Katz, Phoenix Weightlifting Club.

What are the different points you can see, between these two lifters?

Notes:

THE JERK



The jerk is the final stage in the clean and jerk, and forces the entire body, both the upper and lower, to work together to drive the weight or bar into a stable overhead position. Although the upper body supports and stabilises the weight, the lower must generate the explosive drive and power to push the bar high enough so that the lifter can duck under and support the weight. If it was solely up to the upper body pushing, the overall weight that the body could lift would be drastically reduced. However, with the correct technique and power production, powerful jerks can easily move two to three times one's own body weight.

Jerks can also be performed three different ways, depending on what works best for the client, either as a split jerk, power jerk or the notorious squat jerk.

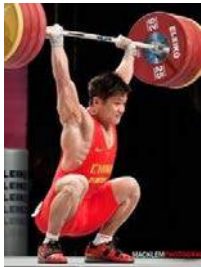


The Split Jerk is your standard jerk pattern, and the most commonly performed in competition. The feet split and the weight is driven directly overhead, allowing the lifter to move swiftly and simply into position, without the excessive demand of shoulder and thoracic mobility that is required for the next two positions.

OLYMPIC WEIGHTLIFTING FUNDAMENTALS



The Power Jerk, which has been known to be called the Push Jerk, is a great progression to the Jerk that teaches the lifter to effectively drive the bar nice and high, whilst dropping into a straight-armed supportive position. There is not a lot of room for error in this lift, given that the bar can easily be lost forwards or backwards, which also requires a touch more mobility from the shoulders.



The Squat Jerk is the most demanding jerk variation out of each of the styles, requiring massive amounts of flexibility, mobility and stability to execute successfully. Essentially, this is an advanced lift, reserved for the advanced lifter, who has a solid grounding in the split and power Jerk. For some, this can be a helpful strategy, as seen with the world champion Chinese lifter Lü Xiao Jun, but definitely not a requirement.

Which style to use is entirely up to the lifter, and must take into account what the lifter can have the most success with. Of course, when it comes to competition the rules do state that the bar must be lifted to straight to lockout, without any form of pressing or the muscling of the bar into position, which is why these three variations can work. But for beginner lifters, gaining skill and strength with the fundamentals is an absolute necessity, so starting off with the basic progressions is important. For the focus of this course, we will be covering the power jerk and the split jerk.

The key technical points and phases when performing the jerk

The Set or Start Position



The initial position of the jerk will start from the end phase of the clean, as the lifter stands up tall and strong in the front rack position. All that is needed is a slight adjustment between the end of the clean to the start of the jerk. For the ideal jerk starting position, the feet should be in a hip-width stance with toes slightly pointed outward, much like the start of the clean and the snatch. The next critical change that needs to happen is the lifter's hand and grip position. For optimal drive and stability in the jerk, the fingers must be wrapped completely around the bar, with the elbows slightly lower than parallel and at an outward angle. This all usually happens as the lifter stands up and recovers from the clean, which is usually snappy and powerful. Since the bar carries momentum, as the lifter stands, the bar and weight will bounce upward in the rack, allowing the lifter to quickly adjust the hands and grip. Once the adjustments are made, this is a moment to collect and recover from the clean, breathe and get ready for the final stage, the jerk.

Notes:

The Dip



The dip is what powers the drive, dive and split phase, and can be quite problematic when teaching beginners. Up until now, there has been a concerted effort to get the ankles, knees and hips working effectively for all the squatting and deadlifting work. But the dip requires a slight change to the action, using less of the hips and more of the knee, and where practiced squatters can run into trouble. This action is a controlled and brisk movement, where the torso remains upright, and the body descends by bending predominantly through the knees. The feet remain firmly planted on the floor, so balance can be maintained. This is much like sliding your back down a wall, whilst maintaining a strong rack position. Be mindful to keep the bar locked in place, and only descend about 10 to 15 cm, before driving explosively into the next phase. Remember, short and sharp downward movement, with control.

Notes:

The drive, dive and split



With an eccentric load and action created by the dip, a great plyometric effect is about to take place, as the muscles of the lower body retain tension and elastic potential. This is also why the dip needs to be short and sharp, with virtually no pause between the descent and the reverse. Pushing the feet through the floor, the aim is to powerfully drive upward into triple extension, launching the bar directly from the shoulders and chest, straight up towards the sky. This highlights the importance of a solid rack position, because this is the launching platform for the upward drive of the bar. Coming up off the toes, make sure your chin is pulled back to give a clear path for the bar, and to save any unpleasant injury to the jaw or face. Once the bar has left the body the split and push begins. One foot shoots forward as the other moves rearward, and the arms push into the bar to generate the dive. At this stage the bar has been given all the power and momentum it needs, and the push is not to move the bar any higher, but to push the body under into lockout. The hips and shoulders remain directly under the bar as it travels upward, and the body maintains in a perfect vertical stack. Driving into the lockout and a solid split stance should happen simultaneously, where the application of tension will lock and hold everything in place. The front foot should be planted solidly on the ground, with the shin vertical to the floor, whilst the knee has a 90-degree bend. The back leg will extend a touch further, and land on the ball of the foot with a bend in the knee, as even pressure and weight should be exerted through both feet.

Notes:

The Recovery



It is imperative that stability is maintained here, and lockout is a continual point of focus. Keeping the bar fixed overhead, there should be a straight vertical line that can be drawn from hips, through the shoulders to the bar. To stand up, the front leg is straightened, and then drawn back first to be placed under the hip. Once solidly in place, the rear foot is brought through to align hip width and parallel to the other. Stand tall to your maximum height, pause and remain stable under the weight, then lower the bar back to the floor. Remember, maintain the stack, and for maximum stability, always move the front foot first, then the back foot.

Notes:

PROGRESSIONS AND SUPPLEMENTARY EXERCISES FOR THE JERK

Overhead quarter squat



The overhead quarter squat can be a great introduction and screen to the requirements of the jerk. Because of the narrow hand placement, the demand for mobility and flexibility is quite high. The aim is to use a dowel rod or lighter weight, and only move as deep as you would for the dip. You should also keep the hips, shoulders and bar in a straight vertical stack. If the client fails to maintain lockout and good position, moving any further will be very problematic.

Overhead quarter squat



a)



b)

Purpose

- Specifically screens the mobility requires for the Jerk.
- Builds strength, balance and confidence for the Jerk.

Execution

- Start with the bar positioned overhead, in a grip width the same as the Clean.
- Take a big breath, create strong tension and alignment and lower.
- Maintain alignment and posture, push hard to keep the arms locked.
- Drop to half the distance between standing and a parallel squat.
- Keep tension and position, and return to the start position.
- Breath out at the top.

Notes:

Overhead thoracic mobility



This drill is a great mobiliser for the overhead receiving position of the jerk. By using a foam roller and some Self-Myofascial Release strategies, the shoulders, chest and thoracic can be mobilised for the demands of the jerk. Aim to position the roller in the middle of your upper back, and reach and hold onto a loaded barbell. Move slowly forwards and back, pausing on particular tight or sore spots, whilst pulling the rib cage down and engaging the abdominals. This will open up the thoracic spine, as opposed to hinging off the lumbar or thoracic-lumbar junction. Spend about 1 to 2 minutes, pausing 15 to 30 seconds on the sore spots.

Overhead thoracic mobility



a)



b)

Execution

- Position yourself on a foam roller, so it lines up perpendicular to your spine, and situated in the middle of your thoracic spine.
- Hold a dowel rod overhead, fully extended.
- Slowly roll backward and forward, pausing on the stiff and sore spots.
- Pause for 15 to 30 seconds at a time.
- Use a barbell to add some load to open up the anterior line and stretch out the chest and lats.

Purpose

- Mobilises the thoracic spine.
- Stretches out the chest and lats.

Notes:

Standing Press



This movement used to be the true test of upper body strength, until the bench press became the exercise that everyone would fight over. Luckily, times are changing again and a resurgence in popularity and acknowledgment of its superiority is filtering through. A grip closer to the shoulders will put less stress on the shoulders, and elevating the elbows means the body can absorb more of the weight.

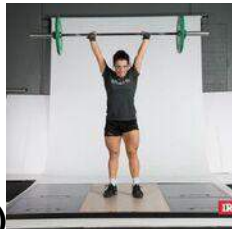
Work on a position of elbows that is most comfortable. The bar should ideally rest towards the fingers rather than the palm. Keep in mind this may be foreign for most, so persistence and warm-ups may be required. Lower back injuries were the primary reason for the press being eliminated; a shortened bar path meant that lifters would adopt the position shown below.

Screening exercises will be necessary as discussed earlier. The press on a sub maximal weight allows the lifter to concentrate on the all-important lockout of the arms.

Standing Press



a)



b)

Purpose

- Builds strength for the lockout.
- Build strength through the kinetic chain for stabilising weight overhead.

Execution

- Start in the front rack position.
- Make sure the fingers are wrapped completely around the bar in a full grip.
- Take a breath in and stabilise the trunk and legs.
- Keep the legs locked and glutes tight.
- Tuck the head back and press the bar straight up.
- Stabilise and breath out at the top.

Notes:

Push press

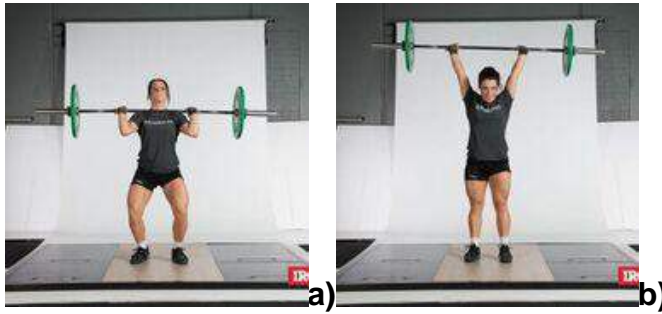


The push press is an extension of the standing press that brings the lower legs into the lifting equation, to allow for greater loads to be lifted. Timing and coordination are essential for the success of the push press, and build the confidence, strength and skill needed to progress on to the jerk.

One of the major key components of the push press lies in the dip and drive, which is the engine behind pushing big loads overhead to lockout. This dip and drive is a powerful vertical extension of the body that is initiated by a shallow bending of the knees and a slight bend of the hip, whilst maintain a strong racking and upright postural position. With a minimal turnaround between the dip and drive, the bar is then driven explosively upward, drawing energy from the stretch shortening cycle, into a solid lockout. The depth of the dip becomes extremely important, because the lifter must know the exact position for optimal drive. Too short, and the quads won't be able to contribute much to the drive. Too deep, and the torso will drop and destabilise the bar and cause ineffective lifting mechanics. Also, grip and rack position must be maintained too, because the rack and the torso are the pillars from which the bar is launched. Naturally, the stronger the pillar, the more stable the base from which to generate force and power.

Avoid teaching or allowing lifters to re-dip under the bar at this stage. If the lifter is starting to drop under the bar to catch it, lower the weight, and practise the upward drive. Confusing the movement with the power jerk will only cause problems down the track, so aim to teach the effectiveness of driving the bar upward, before worrying about getting under it again.

Push Press



Purpose

- Builds strength and power for the lockout.
- Teaches the body how to move more weight with the power of the legs.
- Teaches the first phase of the Jerk.

Execution

- Start in the front rack position.
- Make sure the fingers are wrapped completely around the bar in a full grip.
- Take a breath in and stabilise the trunk and legs.
- Dip at the knees keeping the body tall and upright.
- After a minimal dip, drive hard upward, keeping solid contact with the floor.
- Don't forget to tuck the chin before you press.
- Use the momentum of the leg drive to accelerate the bar driving it from your chest, straight to overhead lockout.
- Stabilise and maintain balance, breathing out at the top.

Notes:

Power Jerk

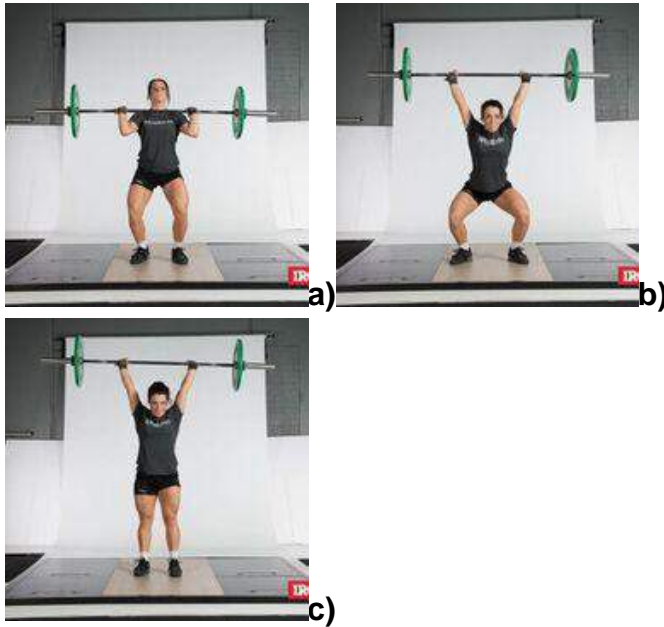


The power jerk is the first step for teaching the split jerk, without overcomplicating the dip, drive and re-dip with the splitting of the stance as well. Essentially, this movement is very similar to the push press, consisting of the same dip and drive pattern. Making sure the fundamentals have been built and practised first with the push press will really help clients progress to this stage.

Once the dip and drive have been initiated, and a powerful upward force has been applied to the bar, the lifter then re-dips under the bar, straightening the arms to a solid lockout. Once stable, the lifter stands to a fully upright position. This explosive movement allows for even heavier loads to be lifted compared to the push press and standing press. Basically, with heavier loads, the overall speed of the bar will be reduced, meaning its overall height will be minimised. At this point, the lifter explosively pushes into the bar to full lockout, not to make the bar rise any higher, but to push their body weight downwards so they can make the lockout. Without a solid position and a solid lockout, the overall weight that can be lifted will be dramatically limited. At this point, the power jerk relies heavily on upper body stability, whilst the lower body provides the power and strength for actually lifting the weight to the final position. This, of course, is why super heavy loads can be moved – not because we have strong arms, but because the body is working as one, and the largest muscles of the body are actually lifting the weight.

The depth of the re-dip will be entirely dependent on a couple of factors. Overall mobility, because without tremendous range of motion, the lifter will only be able to drop so deep; and the weight of the bar, because the over height of travel will force a deeper catch position. Dropping all the way to the floor to stabilise the weight is essentially the squat jerk, which requires a tremendous amount of mobility, strength and stability.

Power Jerk



Execution

- Start in the front rack position.
- Make sure the fingers are wrapped completely around the bar in a full grip.
- Take a breath in and stabilise the trunk and legs.
- Dip at the knees keeping the body tall and upright.
- After a minimal dip, drive hard upward.
- Don't forget to tuck the chin before you press.
- Use the momentum of the leg drive to accelerate the bar driving and pressing it from your chest, launching to full extension, right up on the toes.
- As soon as the bar travels above the head, drop into a $\frac{1}{4}$ squat, punching the arms into full lockout.
- Stabilise the trunk and maintain balance, then stand up tall and strong.
- Breathe out at the top.

Purpose

- Builds strength and power for the lockout.
- Teaches the body how to move more weight with the power of the legs followed by the catch.
- Teaches how to dip under the weight for the catch, without destabilising the body by splitting the legs.

Notes:

Split Drill

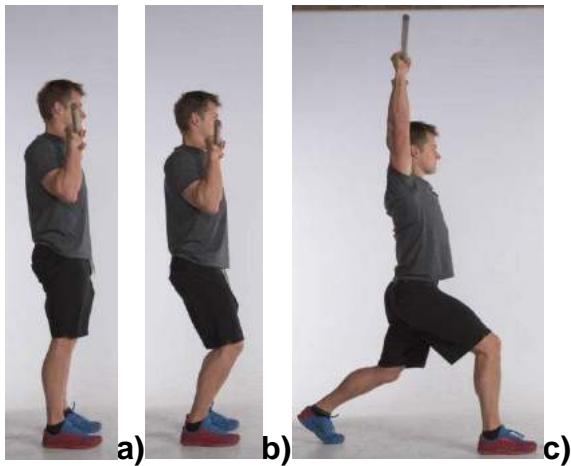


One of the toughest aspects to the split jerk is the coordination of the feet and legs into the receiving position whilst remaining rock solid and balanced. If the feet should land awkwardly or turn outward or in, or if the legs don't split evenly, or if the body moves away from the central position, stabilising the bar will be almost impossible. This drill allows for the practice of the split, without overloading the body.

The aim is to land in a split lunge position, with the front foot flat on the ground and facing forward with the shin relatively vertical, whilst both feet should be in line with the hips. The back leg should have a bend in the knee, and the foot should be balanced on the ball of the foot. Both legs should be evenly split front to back, and the torso should be upright and stable.

Use a line on the ground to establish the even leg split first. Incorporate the arms in a pretend jerking manner, then introduce a dowel rod to get the feel of the exact movement.

Split Drill



Purpose

- Patterns the movement of the legs in the split without load.
- Teaches speed and coordination of the leg split.

Execution

- You can use a dowel rod or simply hold on to a pretend bar.
- Start in either a front rack or basic press position.
- Mimic the movement of the power jerk, dipping at knees and staying tight.
- Pop a driving jump, and split the legs evenly forwards to back and press the rod to lockout.
- You can draw a line on the ground for the start position, and check the distance for each foot from the line in the split.
- Aim to shoot the front leg forward, and the back leg back, leaving your body in the same place.
- Aim to keep the shin of the front leg vertical, and bend the back knee.
- Keep your weight even in your feet.
- To recover, step your front foot back to the start line first, then your back leg to the start line second.
- Stand up tall and straight.

Notes:

Jerk



By taking a progressive approach, by the time you reach the jerk, everything should fall into place. This is where the heaviest loads are moved, and where timing and coordination are an absolute necessity for a successful lift. Once the dip and drive have imparted all the force into the bar, the legs split to allow for a deeper receiving position whilst allowing the torso to remain upright and stable for the catch. The arms push hard into the weight to drive the body down and directly under the bar, explosively locking out and driving the feet powerfully into the ground. This lockout and powerful engagement helps to generate stabilising tension and force. Once locked out, the legs begin to straighten and the front foot steps back first, so that the body can stay directly in place. The back leg is second to move, planting to allow for a hip width stance, standing tall and strong.

In competition, athletes remain tall and stable until they hear the buzzer or see the three white lights signal a successful lift. For lifters, it is imperative to become balanced and stable, resist the temptation to throw the bar down quickly, and take a few seconds to hold the bar high and balanced.

The Jerk



a)



b)



c)



d)



e)



f)

Execution

- Start in the front rack position wrapping your fingers completely around the bar in a full grip.
- Take a breath in and stabilise the trunk and legs.
- Dip at the knees keeping the body tall and upright.
- After a minimal dip, drive hard upward, exploding right up onto the toes.
- Don't forget to tuck the chin before you press.
- Pop a driving jump, and split the legs evenly forwards to back and press the bar straight to lockout.
- Use the press to push the body downward into the split position, generating tension and stomping the legs into a solid split.
- Feel the weight of the bar driving you into the ground.
- The bar needs to travel straight up, and your body will stack directly underneath it.
- Aim to keep the shin of the front leg vertical, and bend the back knee.
- Keep your weight even in your feet.
- To recover, step your front foot back to the start line first, then your back leg to the start line second.
- Stand up tall and straight.

Purpose

- Patterns the movement of the legs in the split without load.
- Teaches speed and coordination of the leg split.

Notes:

FAULTS AND CORRECTIONS OF THE JERK

Fault: The bar is positioned backwards



Common cause

- The dip may see the chest drop or the lifter may be tilting forward on the toes.
- Feet are not splitting equally, or the front leg hasn't travelled far enough.
- The lifter may be placing too much weight into the back leg, or has kept it straight.

Possible corrections

- Perform the dip on the heels and hold the elbows forward and upright.
- Look at pelvic stability and flexibility.
- Pay attention to movement of knees; they should be the only part of the body to move during the dip.
- Try with lighter weights and dumbbells.

Corrective exercises

1. Build strength in the press, to strengthen the posture and straighten the Jerk.
2. Revisit the Power Jerk to reinforce the straight up and down movement and press of the bar.
3. Practise the split drill to gain confidence and coordination of the action of the split.

Fault: The bar is driven upwards but lifter cannot hold weight with straight arms



Common cause

- Lack of strength in arms and shoulders.
- Weak dip and drive.
- Lack of flexibility and mobility.

Possible corrections

- Aim to punch the bar overhead.
- Drive hard and work explosively to use the body when pushing out of the dip.
- Turn forearms outwards in dip position.
- Use a lighter and more manageable weight.

Corrective exercises

1. Use the thoracic mobility drill to improve flexibility and range of motion.
2. Build strength in the standing press.
3. Practise the explosive drive with the push press.
4. Revisit the power jerk to practise form and technique.

Fault: Lifter lacks stability whilst holding weight above head



Common cause

- Jerk and dip may be too frenetic.
- Head may not be in neutral position, and/or head is thrown back.
- Legs cross paths or are split too narrowly.
- Knee of the front leg is too far forward.
- Weight is not evenly distributed in the feet.

Possible corrections

- Aim to keep hips, trunk and shoulders directly under the bar.
- Ensure feet are split in line with the hips, and are equally distant front to back.

Corrective exercises

1. Practise foot placement and control with the split drill.
2. Practise the Jerk with a lighter weight.

Fault: Lifter drops too much in the split



Common cause

- Drive from dip may be lacking.
- Dip may be too slow.
- Dip may be too deep and becomes laboured.
- Lack of strength and coordination.

Possible corrections

- Aim to slam and stop the feet into the ground in the split.
- Aim to make the dip short and sharp to increase upward drive.

Corrective exercises

1. Half front squats to strengthen the position of the dip.
2. Use the dip bump drill, aiming to dip sharply and bounce the bar from the shoulders. This helps to generate the drive and upward force required, without having to move straight into a jerk.

Fault: Weak jerk



Common cause

- The dip is taking place on the toes.
- Bar is lifting off the clavicle, or lifting away from the body during the dip.
- The chest drops.
- Trunk moves forward.
- Hands are gripping the bar too tightly.

Possible corrections

- Aim to keep feet grounded to the floor in the dip.
- Always focus on keeping the body tall and upright.

Corrective exercises

1. Try using a modified Push Press, where the press is taken out, leaving the push bump. The push bump aims to bounce the bar from the body by just using the dip and drive.
2. Practice the Push Press to hone the timing of the press in the Jerk, and to re-ground the feet for the press.
3. Train the Power Jerk to strengthen the posture and to keep the trunk upright, focusing on drive and punch.

PROGRAMMING

Mark Rippetoe, the world-renowned author and strength and conditioning coach, coined a great definition of the idea of training *'being the physical activity performed for the purpose of satisfying a long-term performance goal, which is therefore about the process instead of the constituent workouts of the process'*¹⁶. This really highlights the importance of the overall process being the major part of the long-term goal, removing the importance of the actual workout on any given day, and placing it directly in the hands of how that workout fits into the overall plan. Also, weightlifting coach and author Greg Everett defines a program as *'a systematic and purposeful series of workouts'*¹⁷. This plan or structured series of workouts is what we refer to as programming. For developing weightlifting skills, strength and power, or any real or tangible goal, programming is an integral to controlling and managing the ongoing and adaptive process. Naturally, without it, all we end up doing is throwing exercises at our clients, hoping that they do in fact become stronger, fitter or healthier because of the ad hoc or randomised approach. In the end, variation and randomised workouts is one thing, but planned and structured sessions are the blueprint to success. Benjamin Franklin said it best: *'By failing to prepare, you are preparing to fail'*¹⁸.

Success in the sport of weightlifting, or in the Olympic lifts, or in any other form of strength training requires careful and structured programming. Understand though, the focus of this workshop is centred around the teaching, knowledge and understanding of the weightlifting specific lifts and the potential for using these weightlifting elements in regular training programs, *not* for becoming actual coaches in the sport of Olympic weightlifting or for teaching competitive weightlifters or athletes. Still, at the centre of it all, especially if we are actually looking to train for a specific goal, planning and programming is just as important to the client, as it is with an elite professional athlete.

Programming must always follow an individualised approach, where the specific goals and needs of the client must be addressed and taken into careful consideration. Using pre-exercise screening systems, prior to introducing your client to an exercise program is definitely a great way to start. The *Adult Pre Exercise Screening System* is the preferred and best model for screening clients prior to exercise. By using this particular system, trainers can highlight important health related risk factors prior to the start of the training session, giving greater insight into whether the training benefits actually outweigh the associated risks⁴⁰. This process also allows the trainer to make educated decisions on whether anything needs to be cleared, referred out, or followed up prior to venturing into the training program. If you are after more information about this process, have look at the Adult Pre Exercise Screening System section, on the Fitness Australia website (www.fitness.org.au) or follow this link (<http://fitness.org.au/articles/policies-guidelines/adult-pre-exercise-screening-system/4/18/20>).

An Effective Needs Analysis

Next up is the 'needs analysis', which is the true nuts and bolts of any plan, and is the best way to find out more information about your client's intended goal. This needs analysis should take the Adult Pre Exercise Screening System in consideration in terms of general readiness and medical history, as well as expanding into detailed areas surrounding the client's intended goal. The more information you can glean from their intended goal, exercise history and current state of readiness, the more information you will have for constructing an individualised plan of attack. The following is a basic example of a needs analysis.

Needs Analysis	
Client Goals	
Current Fitness Level	
Medical History	
Client Considerations	
Activity Assessment	

Client Goals

This section relates to why the client has come to visit you as a trainer in the first place. As much as we want the best outcome for our client, we need to remember that all of our methods and programming must centre around the client, and what's best for the client. This of course may be in stark contrast to what we think the client should be doing, and forces us to ask, are my methods as a trainer best suiting the needs of my client? This doesn't mean that the goal doesn't change, which it can over time, it simply states that we must meet and satisfy the goal of the client as best we can.

Current Fitness Level

Paying attention to where the client currently sits in relation to their fitness is very important. After all, throwing a Tabata at a beginner is more than just a waste of time - it's dangerous. For optimal adaptation and for progressive overload to occur, we need to establish a base line of fitness to build upon, otherwise all we do as a trainer is break our client down and potentially injure them. By having a clear indication of where they are currently at physiologically, the kind of activity they are doing or have been doing in the past, and how long they have or had been participating in this activity, will give us a clearer picture of the kinds of progressions, exercises and activity they will be accustomed to.

Medical History

Jumping someone into a heavy squat pattern right off the bat, especially if they are recovering from knee surgery, is not a wise idea. Naturally, past injuries and histories of the client will play a large part in intelligent exercise selection. Talking to associated health care professionals about the nature of any injuries will be a large part of this process, possibly outlining the kinds of rehab and prevention methods you will have to use before serious programming can start. All of this can also tie into the Adult Pre Exercise Screening System, where associated problems will be highlighted. Never be afraid to refer a client out for clearance before you get down into the exercise prescription. Once all of this has been taken into consideration, the correct exercises and methods will become clear.

Client Considerations

Lifestyle, career, family and diet are other areas that we have to be mindful of when programming a session, especially when it comes to elements of weightlifting. Due to the stress of acquiring new skills and the intensity that weightlifting can present, outside influences can affect our overall planning structure. After all, being stressed and mentally fatigued from work can have a real impact on the type of session that we have planned. And making a client's legs excessively sore with DOMS when they have to stand all day at work may not be a smart option either. Considering the outside influences in a client's life will allow for effective and intelligent programming.

Activity Assessment

Last on the list is the Activity Assessment. This is a chance to see where a client is at, and qualify them for specific exercises. After all, dropping someone into a power clean at the start of a training block, when you don't even know if they can front squat, is probably not the wisest choice. Conducting some fundamental movement screens and exercise assessments will give an accurate picture of how someone moves, the kinds of limitations they have, and what progressions or regressions you will have to employ. Essentially we need to create a clear picture of how our clients move, not only so we can gain insight into correct exercise programming, but so we can know how to safely progress or regress our client through the plethora of weightlifting variations and exercises. Really, Paul Check said it best: 'If you are not assessing, then you are just guessing'⁴¹.

WEIGHTLIFTING PROGRAMMING

Weightlifting is simple – athletes are required to be strong and fast so they can make successful lifts in competition. They only perform two lifts in competition, the Snatch and the Clean and Jerk. Therefore, their programs primarily revolve around the key technical elements of Olympic lifting: lower-body exercises to increase strength and

power, upper-body exercises to increase strength and stability, and some accessory exercises to strengthen the weak links in their lifting or motor patterns. Other sports, such as Australian Rules Football, require a mix of various capacities for successful performance. For instance, athletes need to have a large aerobic engine, a tremendous anaerobic capacity, they need to be fast and agile, have great hand, eye and foot coordination and they must be strong and powerful. The qualities of both strength and power that can be developed through weightlifting assist the footballers in improving their vertical jump and sprinting speed, and reducing their energy expenditure during running. This has been proved in many studies, and is why the Olympic lifts and elements of these lifts often appear in their elite programming.

Some of these examples are as follows:

Study 1

In a study of the effect of Olympic weightlifting and traditional resistance training on vertical jump improvement in high-school boys¹⁹, the researchers decided to focus their attention on ways to improve vertical jump height, since vertical jump height is a great standard assessment for measuring athletic strength and power in the lower body. Also, because the Olympic lifts are commonly used in college and professional sport organisations^{20,21} as part of athletic development, the researchers wanted to see if the same effect was present in the high-school populations. Three groups were populated: an Olympic lifting group, a traditional strength group and a control group. Each group was assigned a 4-week general strength training program, followed by an 8-week group-specific training program. Jump testing was conducted pre- and post-program. The results concluded, after the 8 weeks of group-specific training, that the change in vertical jump performance represented a 4.5% increase for the Olympic lifting group and a 2.3% increase for the traditional strength group, giving the Olympic lifting group a 56% increase over the traditional group.

Study 2

Researchers decided to draw a comparison of Olympic vs traditional power lifting training programs in football players²² to see whether either method had a greater effect on 1RM strength in the squat and bench press, 40-yard sprint times, agility and vertical jump height. Twenty athletes from a collegiate football team were selected, all of whom were members of a National Collegiate Athletic Association Division 3 team. The study researched a 4-day-a-week program for 15 weeks of training where athletes were placed into an Olympic lifting group or a powerlifting group. The results showed that there were significant improvements to the vertical jump test, an 18% greater improvement in the 1RM squat, and a twofold greater improvement in the 40-yard sprint time for the Olympic lifting group compared to the powerlifting group.

Time and time again, when it comes to performance, power and strength in various athletic activities, it's no wonder the elite sporting community and strength and

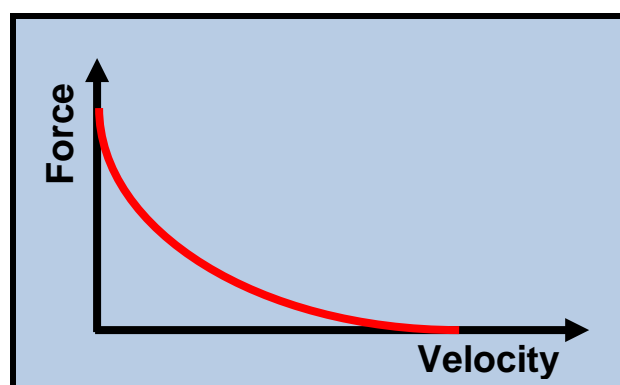
conditioning coaches turn to weightlifting as an effective answer to the performance puzzle. This is also why it's safe to say that weightlifting may be beneficial not only to Australian Rules Football, but to many other non-weightlifting sports as well.

Is weightlifting relevant for the general population?

As a Personal Trainer, it is outside of the *Scope of Practice for Registered Exercise Professionals* to be offering *Sports Coaching*⁴¹ for Olympic weightlifting, however one part of the many roles that a Personal Trainer has, *is to provide individually tailored client assessments, program development, instruction and demonstration, supervised exercise sessions and client reviews*⁴¹. The aim of this course is to stay well within the scope of practise for registered exercise professionals, by using weightlifting elements, exercises and training methodology, *to plan and deliver safe and effective exercise programs for individuals and/or groups*⁴¹. When performed correctly, as outlined in the Safety and the Sport of Olympic Weightlifting chapter of this manual, weightlifting can be a very safe form of exercise and activity. Also, weightlifting trains total body strength and power that integrates the kinetic chain, stabilising and strengthening from the ground up. To put things in a simpler light, weightlifting teaches you how to fundamentally move a weight safely and efficiently from the floor, into a carrying or rack-able position, either overhead or in the front of the body. We only have to consider how many times we hear of people hurting themselves bending over to pick something up, to start to see the relevance that weightlifting may have for the general populous. So whether it is from a safety point of view, building total body stability, strength and power, or teaching people how to move load efficiently, weightlifting methodology can be very beneficial, so long as clients are qualified and assed for the activity, the appropriate methods are taught, and safety and technique is always the number one primary concern.

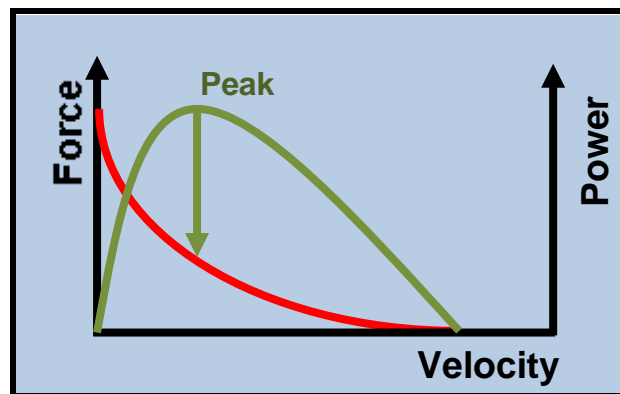
So where do weightlifting-style exercises fit into a training program?

Of course this is a tough question to answer, and depends entirely on the program's focus and design, as well as the overall goals and needs of the client. The figure below outlines the relationship between force and velocity, otherwise known as the force velocity curve.



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The red line depicts the relationship between force and velocity. It sounds complex, but this is just a graphical representation of what we already take for granted – that is, heavy weights can't be moved as fast as lighter weights. If you are performing an exercise requiring a very high amount of force (e.g. a heavy deadlift), then the velocity you perform the movement at will be very low (i.e. the left-hand side of the figure). Alternatively, if you perform plyometric-style exercises, these are completed at a very high velocity, but with no resistance (i.e. the right-hand side of the curve). Now let's add a green line and an additional axis.



$$\text{Work} = \text{Force} \times \text{Velocity}$$

$$\text{Power} = \text{Work} / \text{Time}$$

$$\text{Power} = (F \times D) / T$$

$$\text{Power} = F \times (D/T)$$

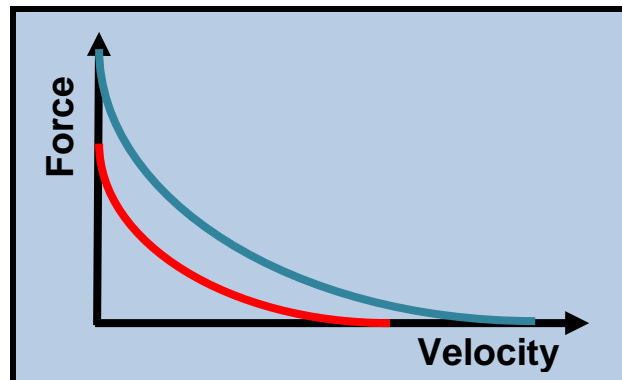
$$\text{Power} = \text{Force} \times \text{Velocity}$$

Power equals work divided by time. And work equals force times the distance travelled. If we transpose the formula, you end up with power also equalling force times velocity. By working out the product of force and velocity and plotting the value on a separate axis, you end up with the peak power curve. This of course depicts the relationship between power, force and velocity. The line shows that there is an 'optimal' amount of force and velocity that allows for peak power output. This makes sense, as power is a product of force and velocity. Power will develop better if you're training it optimally. Olympic lifts and their variations, such as power cleans and pulls, fit somewhere in and around this 'optimal' level of force. This peak power output works at about 30 to 80% of a working 1 repetition maximum. The key take away from this is, strength training requires high force and low velocity, speed or velocity requires high levels of velocity with lower amounts of force, and power requires the optimal combination of both. So if a client has set a specific goal in strength, power or speed, the force velocity curve highlights how this can be attained.

One more major consideration.

Absolute force production is a major component of power output at any velocity. Therefore, there is generally a focus on increasing strength (i.e. squats and pulls) during the early phases of weightlifting training, with a technical focus on the weightlifting-specific exercises (e.g. snatch and clean and jerk). It's also important to note that stronger athletes develop their power qualities better than weaker athletes who undertake power-specific training only. Think of it like this: Consider the below graph and understand that the point where the red line meets the force axis is our

starting level of maximum strength. Then you strength train and raise that base level of strength up to a new value, the blue line. Now you will have greater potential for reaching higher levels of peak power and maximal velocity and speed.



The take away from this is, strength, power and speed are interrelated, so just focusing on one will develop the quality of that one attribute. This is why planning and correct periodisation is very important, so that strength, power and speed can be developed and maximised in a given or specified time period. When and how is all related back to the individual needs and goal of the client.

So what should we do?

Weightlifting is a total body strengthening activity that relies heavily on the lower body for specific power and strength. As a result, most training revolves around the legs, but still incorporates aspects of the upper body as part of the training process. Training can focus in two directions, either as a weightlifting-specific program, or as an integrated weightlifting element and functional program. Understand though, as part of the *Olympic Weightlifting Fundamentals Workshop*, the term *weightlifting-specific program* doesn't refer to the sport of Olympic weightlifting or training for the sport of Olympic weightlifting, it simply refers to the idea of using specific weightlifting elements and methodology to enhance performance and strengthen the body, not for the focus of competition or competing or for training weightlifting athletes.

Because of the way weightlifting trains and develops strength and stability from the ground up, it is wise to follow an model that develops skill, strength and adaptation through the kinetic chain of the body, in an integrated fashion. In other words, following a body-part specific or a muscle-isolated program isn't really advisable. Specificity and transfer of strength to the associated movements and progressions is what we are after. Balance and training can focus on upper and lower body dominant movements, and from pushes to pulls, just like any standard functional programming template. Two basic templates for session design are as follows:

Weightlifting Specific

1 - Movement Prep
2 - Skill Lifts / Power Lifts
3 - Strength Lifts
4 - Accessory
5 - Cool Down

Integrated Model

1 - Movement Prep
2 - Skills and Weightlifting Elements
3 - Session Workout
4 - Cool Down

Because of the demand and overall training effect weightlifting can have on the body, both in terms of muscular and neural stress, it is always wise to include these elements first and foremost in the programming order, when your client is fresh and energised. In an integrated program, elements can be included later in the workout, but always ask yourself, what is the purpose of the exercise in the program? And what is the purpose of the programming? Are we training these lifts effectively? Or are we just inserting new exercises for the sake of variety? Power and strength is what the Olympic lifts and supplementary lifts are all about, so always question their place in a program. Follow the step-by-step sequence and everything will fall into place.

Movement Preparation

In weightlifting, as with any program, an effective movement preparation system must be in place and enforced. This ultimately prepares the body for the rigours and stresses of the exercises program, and specifically readies the body for the task or tasks to come.

Skill Lifts

This refers to the specific weightlifting lifts that aim to develop the skill and technique of the Snatch or Clean and Jerk. By placing these at the very start, focus can be made and refined prior to adding overall intensity to the key lifts, or key aspects that an individual may be missing can be developed and reinforced. Usually these lifts are worked up from 20% to 80% of the relative maximum of that particular skill. Remember, skill is the overall focus here, so just going to overload the pattern can cause some problems, especially for beginners. Skill Lifts can be used to warm up the big lifts, or used by themselves to develop the strength, power and fundamentals needed for the power lifts.

Power Lifts

Power Lifts are the big lifts of the Snatch or the Clean and Jerk, or variations that are used to develop explosive power, depending on where the client may be at in terms of their skills development. These can be maximal, or loaded appropriately.

Strength Lifts

These lifts are aimed at developing the strength required to maximise power output. These also aim to build the necessary stability and confidence needed for catching, starting or accelerating the barbell. These lifts can also be loaded maximally, depending on what phase the client is in.

Accessories

These consist of additional variations, or additional exercises aimed at correcting imbalances or weaknesses of the body. These are aimed at remedying issues in the individual, to help fix the key elements of a fundamental movement pattern.

Cool Down

As with any program, it doesn't matter how crazy or technical the session is, clients don't become stronger from workouts, they become strong from recovering from workouts. The cool down starts the recovery process, and aims to stretch and mobilise the body so that effective adaptation can begin.

As a side note, the Olympic lifts require a tremendous amount of skill to complete successfully. And through successful practice do we acquire the optimal responses from our training. Perfect practice leads to perfect adaptation, this is the way we should look at things, and so training should always focus on developing the quality of movement as opposed to just fatiguing the body. Never be afraid to sacrifice repetitions for the sake of quality.

Managing the variables

If quality of training is the direct focus of our training and weightlifting, then being mindful and knowledgeable about the manageable training variables is an absolute necessity.

The following table helps quantify the training effect and application of various repetitions and their relationship to intensity.

Relationship between maximum number of repetitions, intensity, training effect and application^{23,24,25}

Reps	% of 1RM	Training effect	Application	Reps
1	100	Relative strength increase through enhanced neural drive	Strength, power, speed, technique, myofibrillar hypertrophy	1
2	95			2
3	92			3
4	89		myofibrillar hypertrophy, strength, beginner and youth strength work	4
5	86			5
6	83	Optimal compromise of maximal strength and hypertrophy	Sarcoplasmic hypertrophy, stamina, joint conditioning, rehab, beginner and youth strength work	6
7	81			7
8	79			8
9	77	9		
10	75	10		
11	73	11		
12	71	12		
13	69.5	Strength endurance and continued metabolic conditioning elements		Strength endurance, power endurance, metabolic conditioning, rehab
14	68		14	
15	66.5		15	
16	65		16	
17	64		17	
18	63		18	
19	62		19	
20+	61		20+	

This gives us a clear example of what repetition range to use and what intensity elicits a specific response. For most weightlifting variations, sticking to a low scheme of 1 to 5 is always a safe bet.

In terms of set prescription, the following table best illustrates the optimal range for different outcomes.

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Load, Repetition and Set Assignment^{24,25}

Training Outcome	% of 1RM	Repetition	Set Total
Strength	100-83	1 to 6	2 to 6
Power single effort	100-80	1 to 2	3 to 5
Power multi effort	92-75	3 to 5	3 to 5
Hypertrophy	83-67	6 to 12	3 to 6
Muscular endurance	67 and below	12 and above	2 to 3

Next is the rest, because the recovery can really hamper or give an advantage in our overall program design. Of course we are all eager to get the most out of our sessions, but recovery is an often forgotten component of our training programs. Doing things right will give us the exact response that we are after.

Effects of rest on training outcomes

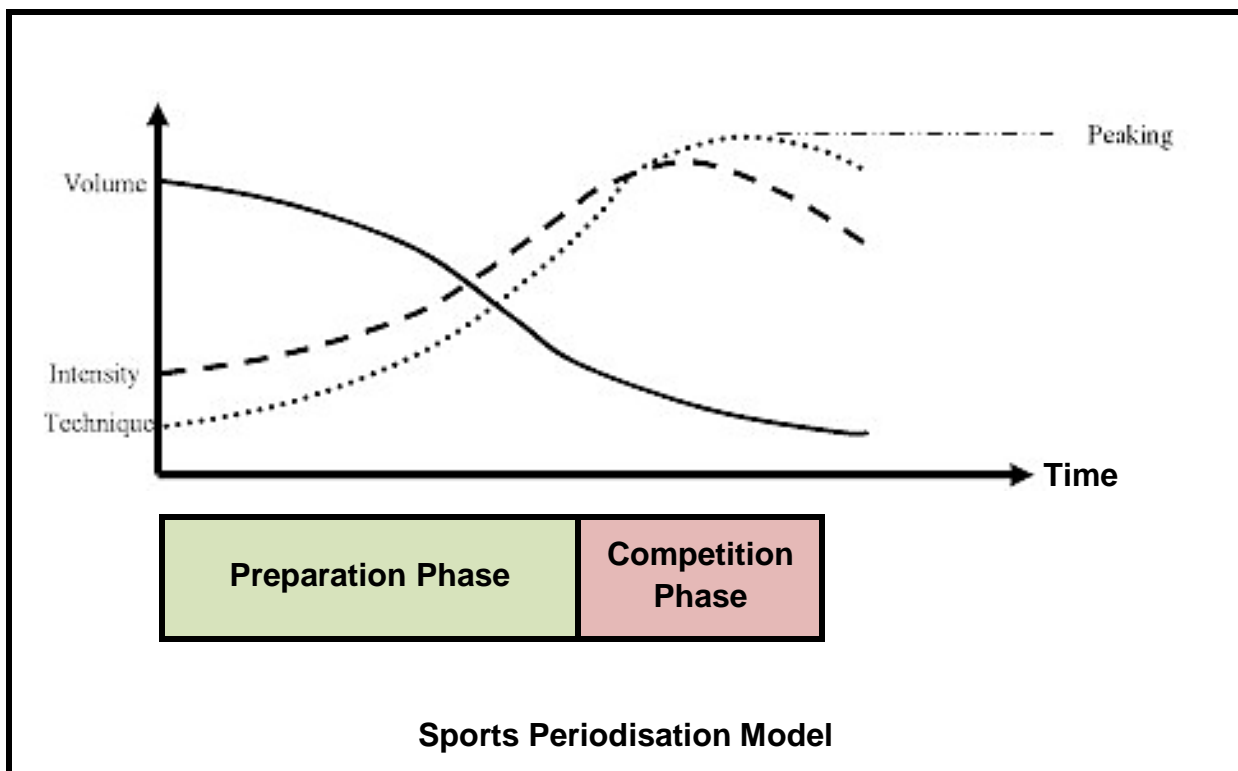
Length of Rest	Training Outcome
Less than 1 minute	Hypertrophy, lactate tolerance, fatigue management, conditioning
1 to 3 minutes	General fitness, stability and control, mix of both strength and hypertrophy
More than 3 minutes	Power, strength, speed

With a great handle on what it means to train for strength and power in terms of variables, these can easily be applied to the exercises we select for our client. By placing these exercises in the right order, in terms of workout structure, clients and absolute beginners will gain the best possible benefit from these progressions and exercises.

Basic Periodisation Methodology

Periodisation is the systematic planning of athletic training²⁶, where the aim is to reach the best possible performance in the most important competition of the year²⁷. This type of planning structure aims to optimise the performance gains of an individual by manipulating and modulating training intensity and volume over a given time period. This is also the method we use for managing and maximising progressive overload. Periodisation of course, isn't something that is just limited to the elite sporting community, this is also a system that we can use as Personal Trainers, to systematically plan out a progressive training schedule. Also, the general population won't necessarily be training for a competition, but they will generally have goals that they wish to move toward. Periodisation can offer a great solution for helping our clients reach those goals, by allowing us to manage training volume and intensity over a given time frame. Maybe our clients are looking to set a new personal bests in a particular areas, maybe they are looking to increase full body strength and power, maybe they are looking at new way to challenge themselves with resistance training, or maybe they are looking to gain skills and improve their quality of life. Whatever the goal maybe, this kind of structure can really put direction and purpose into programming training sessions for clients, helping them to achieve those particular goals in a structured way.

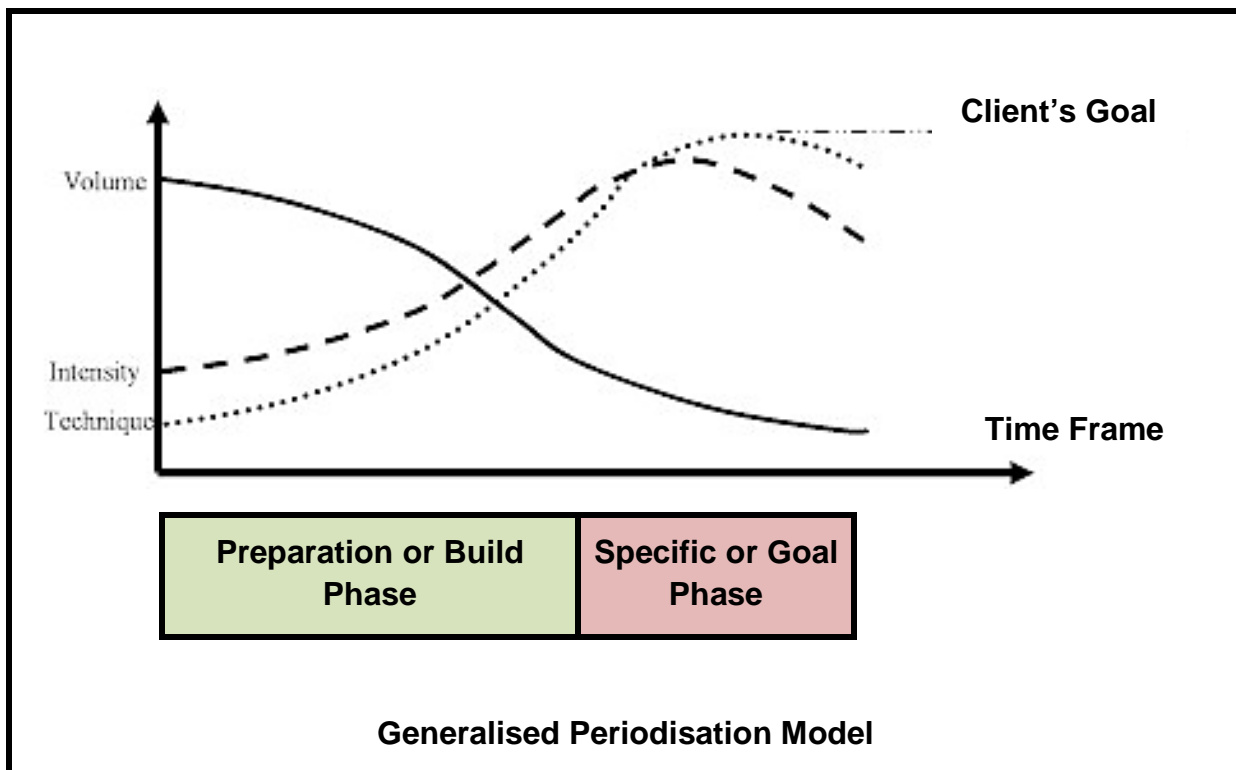
To simplify the process we can look at Matveyev's original periodisation model.



This highlights the relationship between volume and intensity in achieving the best possible outcome. Initially, volume is our focus, to build a base level of conditioning so the body can handle higher levels of intensity. At this point intensity is down. As time goes on, and the body adapts, volume decreases and intensity climbs, bringing

the body into an enhanced state of readiness, when it is able to deal with the high demands of maximal intensity. For the weightlifter, this is fairly simple, the available time for training is assessed in terms of when they are to compete, and then broken into two parts, the preparation phase and the competition phase. These phases are roughly broken into thirds, where two thirds are the preparation phase and one third is the comp phase. With that in mind, a 12-week program would break into 8 weeks of a preparation phase and 4 weeks of a competition phase, including an easy week prior to a big competition.

Of course this periodisation break down, is how a weightlifter might tackle training leading up to a big competition. Naturally though, we are not training our clients for competition or the Sport of Weightlifting, but what we are looking to achieve, is a way to maximise strength and power over a specific time frame. By using the same methods and approach, we can help our clients to maximise strength and power, if it is in accordance with their goals. How this would work for our general clients is much the same as for the weightlifter, except without the pressure of a big competition to worry about. By altering the original weightlifting model, we end up with an effective plan for training our clients.



In terms of a regular client, the goals they can be seeking can be quite varied and numerous. Our job as trainers is to make educated decisions about the kinds of training that we need to organise to get them toward this goal. Weightlifting methodology and training may or may not be relevant for particular clients, and that is fine, but as with all training programs, the final decision must be validated with knowledge and sound reasoning, as well as being appropriate for the individual.

The Generalised Periodisation Model works the same as the Sports model, available time can be divided up into two phases. The Preparation or Build phase is devoted to developing a base level of strength and skill with the Olympic lift variations, occupying 2/3 of the available time. The remaining 1/3 becomes the Specific or Goal phase, aiming to increase the overall intensity whilst reducing training volume, focusing on refining skill, whilst maximising strength and power for the key lifts. Clients might want to work towards a new PB or new levels of technique and strength, so by following the same style of programming, they can follow an effective path to ensure success in the Olympic lifts, and gain all the benefits of becoming stronger and more powerful whilst working towards new goals and personal bests.

A definition of the variables is as follows: *Volume* is considered the total number of reps per set of each exercise in the program, and *Intensity* is the relative percentage of the client's maximum lift, which can be tested as a one repetition maximum.

Understand though, the idea of testing for a maximum isn't a necessity, especially for clients and those beginning with weightlifting exercises, or those at the early stages of lifting. Greg Everett said it the best, "selecting weights by feel is ideal for newer lifters" because "percentage-based intensity prescriptions don't work well if you don't have an accurate or legitimate 1RM to take the percentage of"²⁸. What Greg Everett means here, is that because particular clients might not have established a solid technique or skill base in the appropriate lift, a 1RM test won't produce an accurate result of where the client is in terms of their current physiology. In other words, a client may be strong enough, but their skill will let them down every time. It isn't until the beginner has improved their lifting skill and efficiency that percentages based off accurate 1RMS really being to make any real difference. This statement is like a double edged sword. This tells us that clients may not achieve an accurate 1RM so the percentages won't necessarily help, but forward progression based off of accurate or legitimate 1RM's is a must for those with sound lifting practises in place.

Remember, at the end of the day safety is our number one priority with our clients, so making sure we load and progress people correctly is our goal as trainers. For those new to weightlifting exercises, skill development is far more important than worrying about accurate loading, so spending time relating the overall training intensity back to competence and confidence in the key lifts, will keep clients safe and progressing relative to their current skill level. Submaximal weights can be used and reps performed until the form breaks down. You might work sets of 3-5, adding a bit of weight to each set for power exercises or sets of 10 for strength exercises. See at what rep range the set brakes down at, and apply a repetition max calculator to it.

For example, using the Epley²⁹ formula: $1RM = w (1 + r/30)$

A lifter lifts 100 kg for 4 reps, failing on the 5th. Using the formula:

$$1RM = 100 (1 + 4/30)$$

$$1RM = 100 \times 1.1333$$

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1RM = 113 kg = 100% RM

Therefore the lifter's 1RM is theoretically 113kg, allowing a training load chart to be written up below, which is based off of the relative percent of the RM value.

Theoretical Training Load			
1RM (100%)	2RM (95%)	3RM (92%)	5RM (86%)
113kg	107kg	104kg	97kg

This can be a safer method for determining rep maxes for those wanting to work more accurately with their percentages. Remember though, this is an estimate of ability. For accuracy in more advanced clients, 1 rep maxes will have to be established. However for those new to weightlifting, starting with the barbell alone may be the best option, and practising with manageable loads and intensity will be far more beneficial.

The following can be a great reference for both percentage and subjective based intensity for weightlifting exercise and training.

Weightlifting Intensity and Application

%RM	Subjective Intensity	Application
100-95	Maximal	Strength focus. Power and Strength lifts. Personal Bests and 1RM Testing.
95-90	Heavy	Strength focus. Power and Strength lifts.
90-85	Med-Heavy	Strength/Power focus. Power and Strength lifts.
85-80	Medium	Power focus. Combination of Power, Strength and Skill lifts. Hypertrophy.
80-70	Light-Med	Power/Speed focus. Skill lifts and Foundational Strength. Hypertrophy.
70-60	Light	Speed focus. Skill lifts and Foundational Strength. Recovery.

Preparation or Build Phase

The preparation or build phase is simply a training block aiming to build a solid base of strength, skill and stability for success further down the track, really think in terms of development and practice. This is twice the size of the competition block, or 8 weeks in a 12 week example. In this phase volume will initially be high and intensity low to medium. This will follow an inverse trend, because as intensity climbs the overall volume will drop. As the time progresses through this phase there will be a period of medium to high volume and intensity, which can arguably be one of the toughest periods to train through. During this phase much attention is dedicated to

technique and skill development as well as establishing a solid base level of strength.

Specific or Goal Phase

This phase is where things really start to ramp up, aiming to move the client closer to their specific goal. This is where the key aim is to gear all that power and strength developed in the preparation phase into new personal bests or repetition maximums. A heavy focus will be on the classic Power Lifts, the Snatch and Clean and Jerk, as well as variations of these powerful exercises. Strength will be maintained with high intensities, lifts will move from 80% to 100%, while the overall volume will drop down.

Cycling loads and Intensities

There are two main types of periodisation, linear and non-linear periodisation. This simply adds another layer of complexity to the adaptation process. Linear periodisation simply means every week you add additional incremental intensity to your exercises in the programming, which works perfectly for beginners to intermediate lifters. Once the lifter starts to plateau with that progression, you can switch to a non-linear approach, where each week cycles with a different intensity, following an upward trend. This works best with intermediate to advanced lifters. An interesting study was conducted to determine the most effective periodisation model for strength and hypertrophy, between linear and non-linear protocols. The study concluded, after training 40 males with 1 year of lifting experience, that undulating periodised strength training induced higher increases in maximal strength than the linear model in strength-trained men³⁰.

The below tables outline a basic non-linear, generalised periodisation model for a 12 week program, spanning the Preparation Phase and the Goal Phase.

Preparation Phase or Build Phase

Block 1					Block 2			
Week	1	2	3	4	5	6	7	8
Skill/Pw	65%	70%	75%	70%	80%	75%	85%	90%
Strength	65%	70%	75%	70%	75%	70%	80%	85%
Volume	Medium	High	Low	Medium	High	Medium	Low	Medium

Specific or Goal Phase

Block 3				
Week	9	10	11	12
Skill/Power	85%	90%	80%	100%
Strength	80%	90%	75%	95%
Volume	Medium	Low	Medium	Low

Upon completion of the 12 week program, clients have the option of turning all the hard earned training into a personal best or a new repetition maximum. If this is the case, add an additional two weeks into the schedule. The first week is aimed as a recovery, giving the body time to rest and recover from the training load, the second week is a test week, giving clients the opportunity to challenge themselves with a new PB. This is of course optional, don't push for the sake of pushing, only do so if it aligns with the client's intended goal, or if they have acquired the appropriate level of skill and technique to do so. Never push for the sake of pushing, and always ensure quality and technique is always upheld.

Personal Best or Repetition Maximum Testing Phase

Block 4		
Week	13	14
Skill/Power	80%	PB or 100%
Strength	80%	95%
Volume	Medium	Low

Ultimately, during any stage of the program focusing on a slow and steady approach is key, always complete the highest quality of reps, and cease the exercise as soon as form breaks down. By following this philosophy you can maximise skill, strength and power development, while minimising the potential risk to injury. Never be afraid to alter or deviate from the original plan either, especially if problems start to occur. Placing an easy week in more frequently or lowering the percentages whilst monitoring the clients level of recovery can be a great strategy for not overloading the beginner, and slowing things down and making training more manageable.

If you are planning or using the Weightlifting Specific training model, here are some general guidelines for periodisation and programming:

- Sessions: 2 to 3 (beginner clients) up to 4 to 6+ (advanced clients) per week
- Reps: Skill/Power and Strength 1–5 reps per set
- Sets: Skill/Power 3–5 sets per exercise and Strength 2–6 sets per exercise
- Steadily increase the load for beginners with an emphasis on technique following a linear model.
- If progress stalls, or you have a more experienced client, implement a non-linear progression.
- Aim to de-load after every 4th week so the body has a chance to recover from the cumulative stress. In shorter programs, be mindful that a de-load can be a drop in intensity and volume. In longer programs, greater emphasis can be placed on the reduction of intensity and volume over that week.

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- Balance the exercises between pushes and pulls.
- Aim to correct imbalances and technique breakdown according to the individual.
- Use a calculator for predicting maxes and intensities for beginners, or simply work with weights that are relevant for their progression.
- Once a full program is finished de load for 2 to 3 weeks. A new program can be created, now using the new relative maximums for more accurate future programming.
- Don't push clients into full variations of the Olympic lifts, only progress them when they are ready. Some clients may simply work toward pull variations and power clean, snatch or jerk variations.

For a beginner client using the Weightlifting Specific template, week 1 may look like this:

Week 1							
Skill	65%				Focus:	Skill and Technique	
Strength	65%						
Volume	Med						
		Monday	Rep and Sets	Wednesday	Rep and Sets	Friday	Rep and Sets
Mov. Prep		Mov. Prep	10mins	Mov. Prep	10mins	Mov. Prep	10mins
Skill		Snatch Balance	4x3	High Block Power Clean	3x3	Split jerk drill	3x4
Power		Straight Snatch	3x5 @ 65%	Clean Pull from High Block	3x5 @ 65%	Push press	3x5 @ 65%
Strength		Snatch grip Deadlift	3x5 @ 65%	Front Squat	5x5 @ 65%	Clean Grip Deadlift	3x5 @ 65%
Accessory		Core work	3x10	OH mobility with band	3x10	DeadBall squat throws	5x5
		Box jumps	3x5	Core work	3x10	Core work	3x10
Cooldown		Cooldown	5mins	Cooldown	5mins	Cooldown	5mins

Integrated Model

The *Integrated* model of incorporating Olympic weightlifting is as simple as it sounds. This is simply about choosing relevant weightlifting exercises, and incorporating them into the structure of a traditional workout or regular training program for a particular individual. Understand though, this is not an excuse to place weightlifting elements in randomly, planning and programming are still essential for producing forwards progression and adaptation. This style of programming can be tailored to just about anyone, so long as an individualised approach is taken, and the relevance of the exercises are considered. Remember, it all depends on what the needs of the client are, and whether this style of training is appropriate and suits them.

Integrated Model



The best way to incorporate weightlifting elements into a regular session is to refer to the exercise hierarchy. This simply states that the more demanding, the more complex, the higher the intensity and the more muscles involved in the exercise, dictates that they should come first in a program. Therefore it only makes sense that if we want to add weightlifting elements to a workout, we always insert them first and foremost in the programming. This will keep things very simple in terms of future programming, and allow clients to practise and develop high levels of skill and force output when they are fresh.

If your client is involved in other weekly activities or plays a sport, remember that the resistance training or gym work that you do with them, will make up a component their weekly schedule. This is why planning and periodisation is an absolute must, otherwise you may adversely affect these other activities, or wonder why they may not be progressing as well as they should. As a Trainer you will need to factor in the additional activities and monitor the overall volume and stress levels in any particular week, and organise effective training in and around these variables. Be ready to modulate and change things up when the need arises, never push on with a particular plan just for the sake of it. After all, there is no use planning a 95% session

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if the client is still carrying large amounts of fatigue or stress, or needs to fresh and DOMs free the next day for work or a game of indoor soccer.

An example of a training week may look like this:

Week 1 Schedule							
Focus:	Strength and Power in and around weekly training						
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
AM	Gym		Rest		Rest	Game	Recovery
PM		Training		Gym			
Program							
	Monday				Thursday		
Mov. Prep			10mins				10mins
Weightlifting	1	Clean Pulls	5x5 @ 80%		1	Power Cleans	3x5 @ 85%
	2	Squats	3x5 @ 80%		2a	Push Press	5x5 @ 80%
					2b	Chin up	5x3
Session	3a	Bench Press	3x5 @ 80%				
	3b	DB Row	3x10		3a	BB Lunge walk	3x14
					3b	Bicep Curls	3x10
	4a	Box Jump	3x5		3c	Triceps Ext.	3x10
	4b	Core work					
Cooldown			5mins				5mins

General guidelines for this style of training are:

- Sessions: 2–3 per week
- Weightlifting Reps: 2–5 reps per set
- Weightlifting Sets: 3–5 sets per exercise
- Sets and reps of the other exercise will be dictated by the goal.
- Follow a total body functional training profile.
- Follow the same linear and non-linear protocols in terms of periodisation.
- Modulate the intensities according to the level of fatigue for that week.
- Build additional volume over time, don't overload the client too early.
- Communicate with the client's coach to make the program relevant to the sports goal.

Of course, a large amount of variation in program design is possible, just be very mindful of what exercises you use and when you use them. Technique is paramount from the outset. Remember to always progress your clients accordingly, which will ultimately allow for stable and consistent progressions of load.

Some final thoughts on programming:

- Make sure your exercises are justified: your program should be in line with your needs analysis.
- Keep your program balanced: if you're incorporating a full-body program, you should balance the upper and lower body, as well as agonist and antagonist muscle groups (e.g. pushes and pulls).
- Progress the exercises accordingly: for weightlifting-specific exercises, it is important to progress from simpler movements to more complex movements. For example:
 1. Hang clean pulls to hang power cleans and then to hang squat cleans.
 2. Push press to push jerk and then to the split jerk.
 3. Overhead squat and snatch pulls to snatch balance to power snatch and then the full snatch.
- Progress the load: beginners will show improvements rapidly. It is important to monitor these improvements and increase the load incrementally, as opposed to large jumps. Smaller, incremental jumps (e.g. ~5%) should allow for more consistent and prolonged improvements. Fractional weight plates can be

perfect here, allowing for increases of as little as 500gm to be made to the lift. Follow a linear approach with beginners and move to a non-linear model when progress begins to stall.

- Avoid using exercise templates. Everybody is different, and requires a different set of exercises, repetition ranges and intensities. Different people respond very differently to volume, some recover faster than others. All these variables need to be taken into account, which is why recording and making notes is so important. Over time patterns will emerge for different clients, giving you a better understanding for what works best for that client, and how they respond to training.
- Keep the programming simple, and stick to one or two variations in the beginning. Just because there are plenty of progression exercises to choose from, doesn't mean you have to do all of them. For example a beginner may have two skill lifts and a strength lift in a program like a Snatch balance, Clean pull and a Front squat.
- Keep your power and skill lifts separate. Although you can super set exercises to maximise time, this can complicate things and over fatigue the development stage. Save this style of programming for strength sets and the body of the workout.
- Never be afraid to alter the programming if the client is tired, hasn't fully recovered or is dealing with stress or problems outside the training environment. Remember, weightlifting exercises can be very complex and generate a lot of neurological fatigue, so pushing on with the plan can become dangerous in some circumstances. Monitor your clients closely, and alter the percentages or session as you need.
- REST: Factoring in rest can be difficult. There are many models of progression and periodisation available that can be used to ensure consistent improvement in clients. This can include increasing the load for 3–4 weeks, then dropping back for a rest week, before moving back up again.

ASSESSMENT PROCEDURE

To successfully gain your Olympic Weightlifting Fundamentals certificate, you will need to complete a two part assessment that will be conducted as part of the 5 hour course. This is to ensure you have understood and can demonstrate all of the key theoretical and practical methods for teaching and instructing clients in weightlifting training and exercise. It is important that you study this manual prior to the course, so you can have the best chance at completing this successfully.

Theoretical Assessment

At the end of the course you will sit a 25 minute exam, covering all of the key elements of this course, which will be conducted as a multiple choice and true or false answer quiz. This quiz will cover the key areas of Teaching and Coaching, Safety Guidelines and Assessment, Olympic Weightlifting, Progressions and Supplemental Exercises, Faults and Corrections, and Programming. There are 31 questions in total for a maximum score of 48 marks. To pass the test, you will have to score a 75% or higher, or 36 out of 48 or higher. Some of these questions will have single and multiple answers, so please read the questions and answers thoroughly.

Practical Assessment

The practical assessment will be conducted throughout the course, focusing on the teaching and demonstration of key knowledge in safety, technique and effective coaching. Because of the highly practical nature of the course, participants will have many opportunities to learn and teach various drills and exercises, giving many chances and opportunities for observational assessment. The following table outlines the assessment criteria that is required for successful demonstration of practical knowledge and skill. A full satisfactory achievement must be completed across each criteria.

Practical Assessment Criteria

Assessment	Satisfactory	Unsatisfactory
Ability to set-up and maintain a safe training and lifting environment <ul style="list-style-type: none"> Understand the requirements of a hazard free training zone. Showing the ability to set up a training space safely, with the appropriate weightlifting equipment. Demonstrate the ability in keeping the training zone safe, hazard and obstacle free during training. 		
Ability to apply assessment screens to qualify clients for Weightlifting <ul style="list-style-type: none"> Demonstrate the correct use of the 4 screening exercises prior to weightlifting training. 		
Ability to correctly perform basic movements throughout the session <ul style="list-style-type: none"> Understanding the requirements of an effective and safe starting position for the key exercises, including stance, alignment, position of the barbell, breathing and bracing. Correct demonstration of key exercise technique. Maintaining correct breathing and bracing throughout the movement of key exercises. 		
Ability to coach and cue the key lifts throughout the session <ul style="list-style-type: none"> Correct demonstration of <i>effective feedback</i>. Appropriate use of the 6 principles of good communication. Correct use of <i>effective cueing</i>. 		
Ability to progress and regress exercises effectively dependent on skill and strength level <ul style="list-style-type: none"> Knowledge and application of the key progressions and regressions of the Snatch, Clean and the Jerk for various individuals 		

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PRODUCTS



Olympic Barbells
15kg, 20kg, Cerakote



Elite Weightlifting Set
10kg, 15kg, 20kg, 25kg



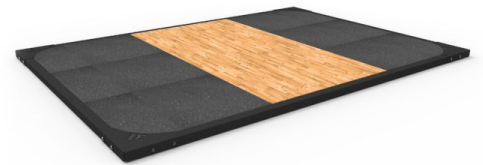
Weightlifting Chalk
Box



Fractional Plate Pack
Pairs: 0.25 to 1.0kg



Barbell Collars
Pair



Weightlifting Platform



Weightlifting Belt
Leather



Nike Romaleos
2, 3XD



Knee Wraps
Standard, Heavy, X Heavy

[SHOP ALL WEIGHTLIFTING](#)

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GLOSSARY

Acceleration: The change in velocity with respect to time.

Adult Pre-Exercise Screening System: In 2010 three national organisations – Fitness Australia, Exercise and Sports Science Australia (ESSA) and Sports Medicine Australia (SMA) – standardised the way pre-exercise screening was undertaken in the Australian health and fitness industry. In partnership, they've developed the Australian adult pre-exercise screening system which provides an evidence-based system for identifying and managing health risks for exercise⁴⁰.

Base of Support: An object base of support is considered the total area boarded by its points of contact and the ground.

Bodybuilding: The act of using repetitions of load, resistance or intensities to induce hypertrophy or muscular size and growth within the body. Bodybuilding is also contested as a competitive sport.

Bumper or Bumper Plate: A specifically manufactured rubber style weight plate that is designed to be dropped.

Centre of Gravity (COG): Also referred to as the Centre of Mass (COM), the Centre of Gravity is the centre point of an objects mass where the all the mass of that object is concentrated or equally balanced.

Clean: The component of the Clean and Jerk which is an exercise contested as part of Olympic weightlifting. The Clean is referred to as that taking of a barbell from the floor, and in one powerful movement, bringing the bar into the front rack position of the body. For the specific rules of the clean, please refer to page 15 and 16

Collar: A device used to secure weight plates in place on the end of a barbell.

DOMS: Delayed onset of muscular soreness.

Force: A strength or energy as an attribute of physical action or movement. $\text{Force} = \text{Mass} \times \text{Acceleration}$.

Jerk: The component of the Clean and Jerk which is an exercise contested as part of Olympic weightlifting. The Jerk is considered the powerful thrusting of the barbell into a strong overhead lock out position that is traditionally done from a front squat position, utilising a split stance to receive the bar overhead before standing up. For the specific rules of the clean, please refer to page 15 and 16

Knurling: The roughened pattern or indentation on a barbell designed to aid when gripping and holding the barbell.

Lever: A rigid structure made to pivot around a pivot point or fulcrum used to amplify force.

Momentum: Moving objects that possess mass also possess momentum, because momentum is the product of mass and velocity. The greater the momentum that a mass possesses, the greater the force is required, for slowing the mass down or changing its direction.

Movement Preparation: (Also referred to as Movement Prep.) The act or sequence for readying or preparing the body for specific activity.

Olympic Barbell: A particular style of barbell that accommodates Olympic sized weight plates. These Barbells accommodate weight plates with 50.4mm loading holes.

Olympic weightlifting barbell: Also referred to as an Oly bar or an Olympic lifting bar, this is a specific barbell created for the sport of Olympic weightlifting.

Power: The rate at which work is done, or energy is expended, per unit of time.
 $\text{Power} = \text{Work} / \text{Time}$

Powerlifting: The competitive sport of lifting maximally weighted barbells in 3 specific exercises, the Squat, Deadlift and the Bench Press.

Resistance training: The manipulation of external loads with the body, to illicit a particular or specific adaptation response.

Sleeve: The ends of a barbell that are usually designed to rotate, for loading weight plates onto.

Snatch: An exercise or lift that is competed in the sport of Olympic weightlifting. This lift consists of taking a barbell from the floor, and in one powerful movement, positioning it over head with straight and locked out arms. For the specific rules of the Snatch, please refer to page 15.

Speed: Rate of change in distance, without reference to direction.

Strength: The maximal force a muscle or muscle group can exert in any given situation or contraction.

Strength training: The progressive and planned strategy of manipulating external load and resistance for increasing the force output of the body.

Velocity: A mass or bodies rate of change to position with respect to its starting position, heading in a specified direction.

Weightlifting: The act, art, or sport of lifting barbells of given poundages in a prescribed manner, as either the snatch or clean and jerk, or as a competitive event or training program.

Weight training: The act or practice of lifting weight, to strengthen or condition the body for a particular response.

Work: Work is equal to the amount of force applied multiplied by the distance over which it has travelled or applied. $\text{Work} = \text{Force} \times \text{Distance}$.