USAW Weightlifting Safety Recommendations

At USA Weightlifting, the safety of our beloved athletes is our first priority. Consequently, we emphasize safety whenever we train our athletes, coaches and referees. In fact, a very large share of the training course we offer to new coaches (and the manual that supports it) is spent on safety issues.

In our course and manual, we teach new coaches the whys and hows of safety. Much of the material that follows is taken right out of our manual. Naturally, without applying all of the material in the course and manual, one cannot maximize safety (e.g., proper technique and training are keys to safety and success in ones weightlifting career in addition to material provided in the document that follows). However, we consider safety so crucial that we want to make sure that every coach and athlete, whether trained by us or not, has access to information that directly affects safety. The following material is provided to give those who have not been trained by us at least some benefits from the safe lifting practices we emphasize.

While the sport of Weightlifting is one of the safest strenuous sports, and serious injuries are rare, we believe that even one injury is one too many, and we want to do all we can to assure that such injuries never occur. We therefore urge you to read the material that follows with care. And, if you have not done so, we invite you to attend one of our courses in the near future.

Safety in Weightlifting – One of the Safest Strenuous Sports

While any strenuous sport presents certain risks to the participant, many are surprised to learn that Weightlifting is among the safest of all strenuous sports (see table below). This is especially true if it is performed correctly with proper supervision, sound technique, and athlete appropriate weights. Under such conditions, the occurrence of serious injury is rare. The injuries that do occur tend to be a result of improper supervision, faulty technique, or overuse — which stems from undertaking a training program that is too strenuous for the work capacity of a particular athlete and/or a particular stage in his or her training. Through the teaching of proper technique, programming, equipment use and maintenance, the limited risk of injury will be minimized.

Sport Injury Statistics* Injuries per 100 participant hours in school sports:

Track and field (USA) 0.57	Tennis (UK) 0.07
Track and field (UK) 0.26	Volleyball (USA) 0.0013
Badminton (UK) 0.05	Weightlifting (UK) 0.0017
Basketball (Denmark) 0.30	Weight Training (UK) 0.0035
Basketball (USA) 0.03	Handball (Denmark) 0.41
Basketball (UK) 1.03	Physical Education (UK) 0.18
Cross Country (UK) 0.37	Powerlifting (USA) 0.0027
Fives (UK) 0.21	Rugby (AUS) 1.48
Football (USA) 0.10	Rugby (SA) 0.70
Gymnastics (USA) 0.044	Rugby (UK) 1.92
Squash (UK) 0.10	Soccer (Denmark) 0.56
Tennis (USA) 0.001	Soccer (UK) 6.20

(Courtesy of Hamil, B. “Relative safety of weightlifting and weight training.” Journal of Strength and Conditioning Research. 8(1):53-57.1994)

From the outset of its coaching course, USA Weightlifting emphasizes safety:

"USA Weightlifting's Approach to Safety in This Course

Assuring the health and safety of our athletes is one of the USAWs most fundamental and important values. As a consequence, throughout this course, we will emphasize safety. We will do this when we talk about teaching weightlifting technique, teaching the proper use of weightlifting equipment, and designing training programs. We will also emphasize safety when we teach athletes how to miss heavy weights (yes, there are very specific and effective techniques for this). We will also teach you how to "spot" another lifter (although spotting is used relatively rarely because lifters do know how to miss lifts quickly and effectively without assistance from others). We will emphasize that you never sacrifice safety for convenience, or in the quest to lift heavier weights. Parents sometimes ask us, "Won't my child drop a weight on her head when she is lifting?" This is understandable because they see a weight above a lifter's head and presume that it would be a natural risk for the weight to drop and strike the head on the way down. But this very rarely occurs among athletes who have been taught to lift properly. Even if it does occur, the bar will almost inevitably brush the athlete and fall safely to the ground. In contrast to many other strenuous sports, traumatic head and spinal cord injuries are virtually unknown, in the sport of Weightlifting. One final thought about safety. Although you will go through this course using text, video, online information and/or live teaching and demonstration of weightlifting, do not ever be afraid to refer back to this material or other similar sources of information to remind you of the finer points of what you are coaching. There is no shame in reviewing material before you implement it. The shame lies in overlooking something which could have been prevented with a review."

In summarizing the objectives of our coaching course, safety comes first: "Upon successfully completing this course, class participants will know the fundamental elements of sound weightlifting technique and how to:

"1) Emphasize safety in lifting throughout the coaching Process"

In describing how assessing at athlete's readiness to train and lift is the coach's first important role we state:

"The Health Assessment

Before an athlete begins training, that athlete should be cleared by a medical professional to perform strenuous exercise in general and weightlifting in particular. While almost anyone can train to become a weightlifter, certain acute and chronic conditions preclude this. For instance, a person who has just torn his/ her ACL may well be able to compete in Weightlifting once the ACL has been repaired and rehabilitated, but not before that. Similarly, a person with a herniated disc is not ready to begin training until and unless that injury has been satisfactorily addressed, and perhaps not at all if such an injury is not fully resolved by treatment.

Prior Training History

Once medical clearance has been obtained, and minors have been granted written parental permission to participate, the athlete should be evaluated for his/ her familiarity with any weightlifting exercises. This is important because the athlete who has been doing power cleans and squats (exercises that will be explained later in this manual) will be able to begin their training at a different level than beginners who have never lifted a barbell before. For instance, the beginner with no prior history of free weight training may need to begin all exercises with just a bar or stick while the more experienced athlete may be able to start with more weight, especially in exercises that do not involve a great deal of skill, such as squats and presses. On the other hand, the more "experienced" beginners may have been performing a certain exercise so incorrectly that it will take them longer to learn the correct exercise technique than someone who has never performed that exercise. Therefore, the new lifter with prior experience should be asked to demonstrate the relevant exercises he/she has been performing. These would be exercises that are part of the basic exercises new athletes will be using to learn how

to perform the snatch, clean, and jerk, such as the power clean and power snatch and any form of squatting or overhead lifting (e.g., front squats, back squats, push presses or military presses – exercises that will be explained later in this manual). If the athlete has no familiarly with these exercises, the coach should simply move on to the critical flexibility assessments we are about to discuss because any weight training background the beginner has will likely not have much carryover value to weightlifting as a sport.

Flexibility Assessments

The sport of Weightlifting requires considerable flexibility. Relatively few new lifters possess the flexibility needed to perform all of the exercises that will be used in training, especially the squat, snatch, clean, and the jerk. That is why weightlifting specific flexibility must be assessed before any training can begin. Once the flexibility assessments have been performed, the coach can decide whether the normal teaching progressions suggested in this manual can be followed, or whether some adjustment in these progressions is required. For instance, many coaches prefer to begin with teaching a new lifter the clean before the snatch. While this is completely optional, as either the clean or the snatch can be taught first with good success, an athlete who is unable to hold bar comfortably on his/her shoulders in front of the neck is not ready to learn the clean. That lack of flexibility must be cured before cleans can be attempted because cleaning with inadequate flexibility precludes the use of proper technique and exposes the athlete to the possibility of injury.

How a Lack of Flexibility Affects the Technique Learning Process

If a lifter shows insufficient flexibility in any of the assessments described above, he/she must not only do the appropriate flexibility exercises, but also must refrain from attempting to learn the exercises referenced in the preceding sections. This will affect the training programs for such athletes, precluding some of the learning progressions that will be explained later in this manual, until the requisite flexibility is attained, as well as the initial program that the athletes undertakes at the outset of training. Therefore, a modification in the athlete's training program from the standard one that will be described later in this manual is absolutely necessary until the athlete achieves the required flexibility in order to proceed with the exercise(s) that has thus far been avoided. Performing flexibility exercises at the end of the workout and, in certain circumstances on non-training days, is essential for new lifters with flexibility problems, so that they can begin to learn the needed exercises as soon as possible.

The coach is expected to administer several flexibility tests to determine whether the new athlete has sufficient flexibility an all areas his/her body to perform all of the exercises that will be performed during training. If a new lifter demonstrates a lack of flexibility required to perform one or more of such exercises, the coach will assign the appropriate flexibility exercises needed to address the problem

In addressing flexibility problems, the manual states:

"Flexibility Training

Flexibility training is one of the key elements of the training programs of most beginners in weightlifting. It is the rare beginner who has sufficient flexibility in every area of his body needed to execute all of the competitive events of Weightlifting and related exercises. Those who logged a perfect score in the flexibility assessments presented in the prior chapter won't really need to do the exercises presented in this section of the manual. But for those who need at least some improvement in flexibility in one or more areas of their bodies (the majority of beginners), the information in this section will be critical for their lifting success.

When training for increased flexibility, it is strongly advised that:

1) only muscles that have been warmed up through a general or specific warm-up be stretched;

2) gradual increases on the range of motion are achieved during stretching and no sudden moves into the full range of motion are attempted;

3) only the current range of motion is sought during warming up and no effort is made to improve the current range of motion;

4) flexibility exercises cease as the specific warm-up progresses, and they are not resumed until skill building, and power and strength training during a given training session have been completed;

5) flexibility training to increase an athlete's range of motion is performed immediately after strength training has been completed, while the muscles are still warm. Remember that the goal of training for an increased range of motion is to enable the athlete to comfortably and rapidly assume the correct starting and receiving positions during the competition lifts and related exercises. Progress toward this goal is tested by repeating the assessments described in the prior section of this manual. Only when an athlete has achieved the desired positions in all four assessments can unrestricted training on all lifts be commenced.

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There is then a discussion of the importance of an immediate focus on technique:

"Why Teaching Good Technique from Day One Is Absolutely Critical

In this section of the manual we will discuss sound methods for teaching and learning the basic exercises used in weightlifting training. An outstanding coach of beginning and intermediate lifters is perhaps first and foremost a teacher of correct technique. Good technical habits learned by athletes early on will tend to carryover throughout their careers. Unfortunately, poor technical habits learned early are very difficult to correct later. It is absolutely essential that the coach focus beginners on learning sound technique from their first moment in the gym. Of all lessons a coach can provide to their beginning athletes, an understanding of good technique and how to develop it is perhaps the most important. Top athletes develop their technique through relentless efforts over a period of many years (improved technique in athletes five years after they debut at a world championships is a common occurrence). But in order for this to happen, a devotion to perfecting technique must be developed early on in an athlete's career.

Good Technique Is Much Safer

While Weightlifting is a safe sport relative to other strenuous sports such as soccer, gymnastics, football, and basketball, it is much safer still if good technique is learned and practiced throughout a lifter's career. Good technique is biomechanically sound, so it minimizes the stresses on a lifter's body that heavy weights can deliver. We, in USA Weightlifting, are interested in safety first and foremost, so to us learning good technique is not only effective; it is the right thing to do.

Good Technique Is The Primary Foundations of a Successful Career

What a lifter learns in his or her early days of training will impact the rest of that athlete's career. A sound building cannot be built on a weak foundation. Sound basic technique is perhaps the most important foundation for a Weightlifting career that will require continual technical development throughout that career. Moreover, if that sound foundation is not laid at the outset, it will be very difficult to correct it later on. One of the truisms of coaching is that it is much easier to teach someone to lift correctly with no background in weightlifting than it is to correct the mistakes someone has been making for some time.

The Bottom Line on Technique

For all of the previously mentioned reasons, and many others, cultivating sound technique from the outset, and then improving it on an ongoing basis is one of the most important keys to a successful Weightlifting career. Do not let the athletes you train sell themselves short by failing to master proper technique. Follow the steps outlined in this course, and in later ones, to help your athletes safely achieve their ultimate potential and the ultimate joy they can achieve in the wonderful sport of Weightlifting."

Maintaining correct posture during lifting is important for safety so:

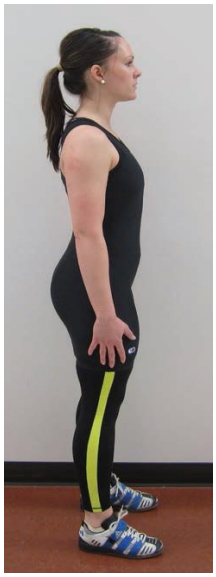
"The Universal Posture of Weightlifting

You will notice throughout the video footage the sequence photos of the snatch, the clean, the jerk, and virtually all of the other exercises weightlifters perform, lifters maintain a posture with these important characteristics:

1) the chest is inflated and "up" and shoulders are back as if the athlete is standing at attention; thus minimizing the natural curvature of the upper back (the upper back is never rounded or hunched);

2) the lower back is arched in the same way as it is when a person is standing at attention so that the natural curvature in the lower back is always maintained (never exaggerated nor diminished);

3) the head is vertical or looking slightly up, and the eyes are looking straight ahead or slightly upward. (maintaining the head in a vertical – upright – position is particularly important when the lifter is moving under the bar in the snatch or jerk, or when the lifter has a weight overhead, to keep the bar out of the upward/downward path of a rising/falling bar).

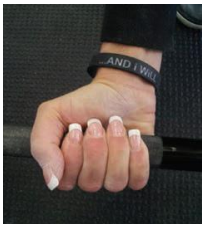


This is the universal posture of weightlifting whether you are taking the bar from the floor, performing a squat, or holding a weight overhead. Maintaining this posture at all times helps to protect the back from overstress and helps to assure that the tremendous force delivered by the legs and hips during the lifting process is transmitted directly to the barbell during all of the lifts, rather than having the force generated by the legs and hips dissipated through a torso that is sagging and absorbing the force of the legs. While great care must be exercised to assume the correct posture, the good news is that essentially only one posture needs to be learned, and posture is relatively simple and natural. Athletes are often helped in assuming and maintaining the correct posture by thinking of inflating and raising the chest and lifting it up and out, by pushing it forward and minimizing the natural curvature in the upper back, while maintaining the natural arch in the lower back. Many are also helped by thinking of elongating the torso and generating moderate tension in the muscles of the back, particularly the spinal erector muscles that are situated on either side of the spine. Lifting legend, Tommy Kono, recommends having the athlete sit in a chair and raise the chest while lengthening the torso to teach the correct posture. While most athletes find it relatively easy to attain and sustain the correct posture when they are standing erect, many round their backs when they tilt their torsos forward. Another lifting legend, Zygmunt Smalcerz, likes to have lifters learn to maintain the correct posture

when the torso is leaning forward by placing the hand on the knees while inflating the chest and arching the back. Feedback on the posture via a video or mirror is often helpful as many beginners think they are maintaining a correct posture when they are not. If the lift commences by lowering the bar (e.g., in the squat) the lifter normally holds that breath until the bar has been lowered to a position from which the lifting of the bar upward commences. Whether the lift begins with lowering the bar or with raising it (e.g., in lifting the bar from the floor), once the upward lifting has commenced (or immediately after it has been completed), the lifter exhales. If a lift is to immediately follow (such as a jerk after a clean or another repetition in the same exercise) the lifter takes a few quick breaths and holds the last one just prior to beginning the subsequent lift. Once the series of lifts has been completed, the barbell is replaced in its starting position and the lifter resumes normal breathing.

Only Two Grips Are Acceptable for New Lifters – Standard and Hook Grips

In the upcoming sections of this manual, we will discuss how to teach the clean and snatch. Before we do that, it is appropriate to discuss the proper means for gripping a barbell. There are only two grips that should be taught to new lifters: the standard or "opposing" grip and the "hook" grip. In the standard grip, the palms are pointing back when the bar is gripped to lift it from the floor. The thumb wraps around the bar from back to front and the other four fingers are wrapped around the bar from front to back. It is also referred to as the "opposing grip" because the four fingers go around the bar in one direction and the thumb in the other or opposite direction. This grip can be used for all weight lifting exercises that involve gripping the bar, particularly all forms of pressing, jerking, and squatting. However, the strongest possible grip for lifting a barbell from the floor is known as the "hook" grip. No one quite knows when this grip was invented, but it is an incredibly powerful ally for all weightlifters who wish to lift maximum weights in the snatch and clean. The hook grip not only increases the amount a lifter can lift, but it helps to assure good technique, because a lifter who is struggling to hold onto the bar will tend to bend the arms during the pull, which is a clear and serious technical mistake and one that is very hard to correct once it becomes a habit. So important is the hook grip that no top lifter in the world uses any other grip when he/she attempts a maximum snatch or clean. It is simply a must. The hook grip is secured by hooking the thumb around the bar, then wrapping the index (forefinger) and middle finger, or at least the forefinger, over the thumb, the remaining fingers wrapping around the bar. Virtually all lifters will experience discomfort in the thumb when they begin to use this grip and they must persist through this initial period of adjustment. The discomfort can be mitigated somewhat by wrapping a layer of surgical tape around the thumbs. It can also be mitigated by using the grip for a set or two at the outset of ones training with it, then adding sets using this grip over several workouts. The good news is that over time the discomfort will subside and eventually the lifter will not experience any material discomfort while using this grip. The grip that should never be used is the "thumbless" grip where the thumb and finger go around the bar in the same direction. This grip is not nearly as strong for lifting the bar from the floor as the hook grip, or even the opposing grip. While some lifters find such a grip more comfortable for the jerk, the likelihood of the bar's slipping out of the hand during the jerk, or any overhead lift, is much greater than with the opposing grip, although the incidence of the bar so slipping with either grip style is extremely low. The thumbless grip is particularly dangerous in the bench press, where a falling bar can strike the lifter on the face, neck, or chest and trap the athlete against the bench, so this grip should never be used when performing this (or any other) exercise.



Standard or "opposing" grip

Beginning of the "hook" grip

Final position of the hook grip

Thumbless grip (unacceptable)

Lifters perform many full squats during their training, so learning to use a standard squat rack correctly is important:

"Using A Standard Squat Rack

In order to perform front squats with any substantial weight above an empty bar, a standard squat rack should be employed. The nature and use of this rack will be described here, but the instructions provided apply to a standard rack, images of which will appear on the photos and video that accompany the explanation of this exercise. Any instructions provided by the manufacturer of the rack should be followed if the racks differ from what is presented here. A squat rack can used for many other exercises, such as overhead squats and back squats and all forms of pressing and jerking done without a preceding clean. The first step in using a squat rack is adjusting it to an appropriate height for the athlete. Squat racks are typically comprised of two sets of two vertical metal tubes, each set having one tube that fits inside the other. The inner tube generally has a series of equally spaced vertical holes. The larger, outer tube has one or two sets of holes. In order to lock the fork shaped bar receiving mechanism that sits on top of the inner tube at an appropriate height, a pin is inserted through the set of holes in the outer tube and the inner tube when the holes in these tubes are aligned. This is done on each side of the rack before the bar is placed on the rack (never try to adjust the height of a rack when it is supporting a loaded barbell). Once the height of the forks is set, a bar is placed on the forks; the front part of the fork is very short, perhaps an inch in height or less, while the back part of the fork is several inches high. The correct height for the bottom of the fork, which supports the bar, is one that requires the athlete to bend the legs only a few inches in order to get under the bar, but it also enables the bar to clear the front fork by an inch or two when the athlete stands up with the legs straight. The lifter faces the rack to remove the bar and, after placing the shoulders under and in contact with the bar with the torso in a vertical position and the feet under the hips and shoulders, the lifter extends his/her legs. The athlete then backs out of the rack by stepping back one or two steps, until the feet are in line, and is ready to begin the front squat as described in the section below.

At the conclusion of the squat, the lifter walks forward into the rack with the torso held upright. The lifter should never lean forward to replace the bar in the rack. Rather she should step slowly toward the rack with the torso held vertical, until the bar gently touches the rear fork of the rack on each side. Then the lifter bends the legs until the bar contacts the bottom of the fork solidly. The lifter then moves out from under the bar. It is not necessary, or even desirable, to look at the forks when one is replacing the bar in the rack as this generally results in the lifter's turning the head and even twisting the body to contact the fork on the side being focused on. Then, when the lifter looks at the fork on the other side, the bar may move away from the rack on the opposite side. Looking straight ahead and being guided to the rack by peripheral vision and gentle contact with the rear forks is a much safer and more effective strategy (the lifter should be careful not to push on the rear of the forks forcibly as this could tip the rack backward).

Preparing to remove the bar from the squat rack

Preparing to begin the front squat after having stepped back from the rack

While weightlifters want to learn to make all of their lifts in training and competition, they will miss and must be completely prepared to do so safely, and they of course must be prepared to lower the bar correctly after a successful lift:

"Teaching Athletes How to "Miss" Correctly

Martial artists are always taught how to fall before they are taught throws, strikes, and other offensive/defensive techniques. That is because while the attacks and good defenses are at the core of those arts, the ability to fall safely is a prerequisite to safe practice. The ultimate objective will always be to make others fall, but martial artists must accept the fact that they will fall and they must learn to do so safely. Similarly, weightlifters must strive to eventually never miss a lift. But misses will occur, and often until technique is mastered, so the ability to miss safely must be learned at the outset. Therefore, as we explain how to perform the front squat, the overhead squat, and the jerk footwork, we will explain how one goes about learning to miss safely.

How to Miss a Front Squat or Squat Clean

The lifter should learn how to miss a front squat just in case he/she is not able to recover from the full squat position to the standing position. This method applies to missing a squat clean as well. If the lifter loses his balance, cannot stand up from the low position, or the bar starts to fall off the lifter's shoulders, the lifter pushes the bar forward with the hands and moves the body, especially the knees, back, so that the bar falls in front of the lifter."

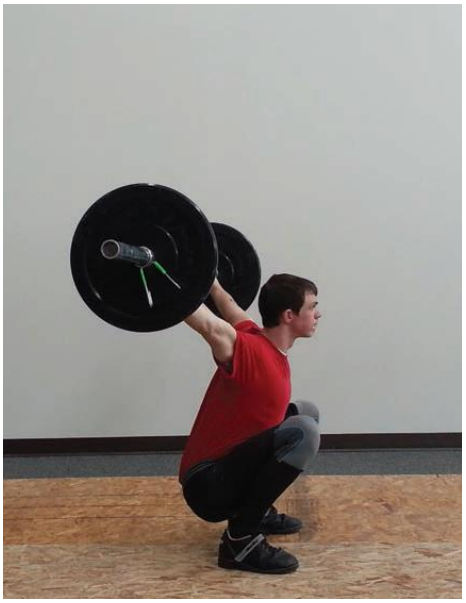
Missing a front squat correctly, knees pulled back and bar pushed forward

How to Miss an Overhead Squat or Squat Snatch

Before attempting to learn the overhead squat with an actual bar, one should learn how to miss an overhead squat safely, since that will almost inevitably happen while one is practicing this lift. One of the keys to a safely missing an overhead squat correctly, as well as actual snatch, is to lock the elbows solidly once the bar is overhead and to maintain that lock at all times, even at the outset of a miss. Doing this assures the barbell will be well away from the head and torso of a lifter, even if it cannot be secured overhead. If the bar is being lost toward the front of the lifter, and the lifter maintains the arms in a fully locked position, it is a simple matter to push the bar that is forward even further forward and to pull the knees back and/or to jump back, to get out from under the bar. If the bar is being lost rearward, the lifter pushes back on fully locked arms and jumps forward out of the path of the falling bar. As long as the elbows are locked, the bar cannot hit the lifter's head, neck, or shoulders because the locked arms force the bar to move in an arc around the body, reaching a position either 90 degrees forward from a position directly above the shoulders, or 90 degrees backward from such a position. In either extreme of the arc, the bar is away from the head, neck, shoulders, and torso, so the lifter merely needs to

complete the miss by moving the legs out of the way and open the hands. It is important that this latter movement be performed immediately after the pushing of the bar forward or back, so that the lower body is out of the way as the bar passes the torso and travels toward the platform. These movements can and should be practiced with a stick when one is learning the overhead squat by allowing the stick to fall to the platform in front and behind the lifter several times. Using a stick during the learning process prevents any harm from coming to the lifter if he/ she should fail to push the bar far enough forward, or back when it is dropped, or fail to jump back if the bar is forward or jump forward if the bar is being lost backward.

When missing forward, the lifter pushes the Bar forward on straight arms and pulls the knees back to drop the bar forward safely



When missing backward, the lifter pushes back on straight arms and jumps forward to drop the bar behind safely (the hands open to release the bar to fall freely when the bar has reached approximately the position shown, or slightly lower)

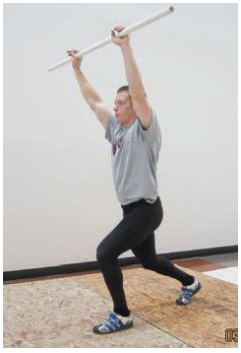
How to Miss a Jerk Safely

While the lifter is mastering his footwork for the jerk, the process of learning how to miss a jerk safely needs to be carried out with a stick. As was the case for the snatch, the first principle of missing a jerk safely is to always lock the elbows solidly when the bar is put overhead. This is true when performing the exercise with the stick, but it becomes much more important when a heavy jerk is being attempted. The lifter must invariably lock the elbows when jerking, even if that places the lifter in a position where the legs are bent so deeply that a recovery from the split becomes challenging. You must always lock the elbows once you decide to attempt a jerk — period. The locked elbows are actually required under the rules of Weightlifting, but, more importantly, they afford the lifter a crucial safety element. As was noted in discussing the snatch, when the elbows are locked, the barbell cannot hit the head, neck, shoulders, or torso of the lifter because the very length of the arms keeps the bar away from these areas. As soon as the elbows bend, the lifter is not only in a weaker position, but the bar can fall on these areas as rare as that is. In contrast, if balance or control of the bar overhead is lost, when one is attempting a jerk, but the lifter maintains the arms in a fully locked position, it is a simple matter to push the bar that is forward even further forward and to pull the front foot back out from under the falling bar. If the bar is being lost rearward, the lifter pushes back on fully locked arms, opens the hands to permit the arms to be pulled forward and away from the bar and at the same time pulls the back leg forward out of the falling path of the bar. Naturally, it is critical that this latter movement be performed immediately after the pushing of the bar forward or back, so that the lower body is out of the way as the bar passes the torso and travels toward the platform. The lifter should practice missing with the stick, both forward and back, so that when the athlete begins to lift the bar

or heavier weights, he will know exactly what to do in the event of a miss. If this is done for a few workouts, the procedure should be learned well enough so as to be carried out automatically in the future. But if the lifter shows any signs of having forgotten how to miss, this procedure should be practiced again.

The stick overhead in a typical split jerk position.

The stick has travelled to far behind the shoulders and hips to be controlled safely so the lifter will push it back on straight arms and pull the back foot forward, out of the way of the falling bar.



Here the stick is too far forward, so the lifter will push it further forward on straight arms and pull the front foot back, out of the way of the falling bar

Dropping the Barbell in a Controlled Manner

It is customary, when bumper plates are being used, for athletes to drop the bar after the completion of an exercise that does not entail using a rack. However, this should not be done in a completely uncontrolled manner. The bar should always be dropped in front of the lifter and never propelled downward by the lifter. Before dropping the bar, the lifter must assure that the legs are out of the way. Discouraged lifters sometimes drop the bar from a squat position without assuring that their legs are out of harm's way. They almost invariably get away with it, but a completely unnecessary disaster can occur when uncontrolled missing is done, as the bar can fall several feet and contact a leg or knee that is fixed in place by the foot. Therefore, new lifters should be taught to push the bar well forward at the outset of the intentional dropping motion. Athletes should also be sure to release the hands from the bar well before the barbell hits the platform (at least when the bar reaches waist height), and no body part should be above the bar when this happens. Bumper plates can cause a barbell to bounce upward quite forcefully when it first hits the platform, and the lifter does not want to be the recipient of any of that force."

The course and manual explain the performance of an essential exercise for beginners, the "Overhead Squat" in great detail, but in terms of safety:

"To prepare for the overhead squat, a lifter generally takes a barbell from a squat rack with the barbell resting behind the neck, and on the upper back and shoulders. If the rack can be placed wide enough so that the lifter can assume his snatch grip without the hands coming very close to the forks of the rack, the snatch grip is assumed.

For lifters with a very wide or even collar to collar snatch grip, the bar will need to be taken off the rack with a narrower than snatch grip, then the hands can be moved out to a snatch grip once bar has been removed from the rack. This may take some guidance from the coach or another lifter, to assure that the hands are positioned correctly. See the section on "Selecting the Correct Snatch Grip Width" to determine the actual width of the grip. It is critical to bring the hands in until they are only slightly wider than the shoulders before the bar is replaced on the rack after the overhead squat has been completed. This assures that the fingers cannot be caught between the bar and rack forks.

With light weights, the lifter will be able to press the barbell up into a position with the elbows fully locked and the bar over the shoulders. With heavier weights, the lifter will need to use an upward thrust of the legs, similar to what is done in a jerk drive, to get the bar to arm's length, or the assistance of spotters on each side can be used, with each spotter helping the lifter to get the bar to arm's length and then releasing both sides of the bar simultaneously once the bar is over the lifter's shoulders and the elbows are fully locked. It is best for the spotter to support the bar until the lifter then verbally signals his/her readiness (or pre-agreed to count, such as "1, 2, 3").

The starting foot position is similar to that of the front squat as the feet are hip width apart or wider, with the toes turned out somewhat. A somewhat wider stance than is used for the front squat is common in the overhead squat and squat snatch. The grip is snatch width (which is explained later in this manual). The bar is positioned directly above or slightly to the rear of the shoulder joint and the shoulder joint is over the middle of the foot. It should be noted that if the lifter is able to press the bar up into the start position, he/she should be able to lower the bar slowly and safely onto the rear shoulders after the overhead squat(s) has been completed, being careful not to let the bar come in contact with the vertebrae before contacting the shoulders.

However, once the weight is heavy enough that a leg drive or spotters are needed to get the bar into the start position, it is not safe for the lifter to attempt to lower the bar onto the shoulders after the overhead squat(s) has been completed. In such a case, the lifter should either safely drop the bar in front of the body to the platform, while staying well clear of the rack. In such a case, the bar will need to be replaced on the rack for the next set. Alternatively, the lifter can obtain assistance from two spotters, one on each side of the bar, to lower the bar to the shoulders, after which it can be returned to the rack by the lifter. Attempting to lower a bar to the rear shoulders without assistance can result in the bar hitting one of the vertebrae before contacting the shoulders and bruising or even fracturing the vertebrae, so this should never be done. As was the case for the front squat, the lifter should be taught to miss with a stick before any weight is attempted in the overhead squat. Then, should the lifter lose balance or be otherwise unable to complete the lift, the barbell can be safely "missed" (dropped to the platform)."

Power Jerk Behind Neck and Jerk Behind Neck

Some athletes who experience difficulty in executing the power jerk and jerk may find it useful to do some practice in the power jerk or jerk behind the neck. The chief advantage of this exercise is to teach the lifter to end the jerk with the bar above or slightly behind the shoulders. Some lifters find it difficult to get the bar into that position when they perform the power jerk or jerk, and these exercises can help to make them comfortable with the bar in the correct finishing position. These exercises are essentially identical to the standard versions of them except that the bar begins resting behind the neck, on the tops of the shoulders and trapezius muscles. From there the dip and explosion are the same as for the regular power jerk and jerk with the athlete catching the bar overhead, with the elbows fully locked, and the bar over the shoulder joints or just behind the hips and torso under the shoulder joints. The major difference is that the chin is not tucked in and the head pulled back before the drive begins, as the bar does not have to clear the chin but rather the back of the head. However, caution must be taken on two levels when these exercises are used. First, every finished rep must either be dropped to the platform or lowered to the shoulders with the assistance of spotters, to avoid any jarring contact with the neck or vertebrae of the upper back. Failing to do this can result in injury to the vertebrae. Second, some lifters

can become very adept at jerking behind the neck to the point of being able to lift much more from that position than from the front of the neck. This can occur without the lifter improving the jerk from in front of the neck at all. Jerks from behind the neck can be helpful learning tools, but they should not be practiced to the point where they are preferred to the regular versions of the jerk.

<u>The Use of Spotters When Squatting and Replacing the Bar Behind the Neck</u>

The most common use of spotters is in the back squat, although they can be used with benefit in the front squat as well. They are not generally used during an overhead squat, since the athlete simply drops the bar if the lifter cannot complete the lift, but they are often used to help the lifter return the bar to the rack in the overhead squat exercise once the lifter has completed performing his set. You should secure a spotter for each side of the barbell whenever the weight being used is expected to be difficult for you. Then, if you cannot complete the squat, which the spotters will judge by watching the bar and stopping its downward progress as soon as they see the bar not only stops on its way up, but also begins to descend the slightest amount (or sooner if they hear the lifter ask for assistance). In this case, the spotters grasp the end of the bar on their respective sides, making sure the other spotter is doing the same, and then together they assist the lifter in getting up, as the lifter exerts as much effort as possible to assure that the spotters are not lifting the bar by themselves. Spotters are also very important when any exercise ends by returning the bar behind the neck after placing it overhead, such as when jerking behind the neck or performing the snatch balance (exercises that are explained below)".

Moving the bar and body as vertically as possible while lifting is important for safe lifting:

<u>"Vertical and Horizontal Body Motions in Weightlifting</u>

It is a generally sound principle of weightlifting technique that the bar and body be moved primarily in a vertical manner throughout the lift and an effort to minimize horizontal motion as much as possible should be undertaken. Weightlifting is a vertical sport. We lift weights up and we drop the body down. Jumping forward or back, banging the bar forward with the thighs or hips, and splitting forward or back are to be avoided. In the coming sections of this manual we will be discussing moving into the receiving positions of the jerk, clean, and snatch. One important piece of advice is connecting with the athlete's movement under the bar is to "drop the hips." Many lifters, consciously or unconsciously, think of dropping the head or torso when moving under the bar. This is almost always a bad idea. Thinking of dropping the head or torso down often results in the lifter tilting the torso forward and driving the hips back, which are two incorrect movements. Instead, the lifter should be thinking of dropping the hips, essentially the center of the body, straight down as quickly as possible when he is moving under the bar. This will generally result in a correct and efficient descent, whether in the snatch, clean, or jerk.

Assuming correct receiving positions to "catch" the barbell overhead or on the shoulders after lifting it upward is essential. The most universal principle for receiving the bar correctly is to hold the torso in a strictly vertical position, or have a very slight forward lean. The lifter never leans back to receive the bar in the snatch, clean or jerk:

Power Jerk

While the lifter is learning footwork, he/she can become comfortable with driving the bar overhead in the jerk by practicing the power jerk. This method of jerking is actually used by a very small percentage of top athletes to execute their jerks in competition. However, both consistency and the ultimate amount of weight that can be lifted with this style is generally significantly less than with the split jerk. So the vast majority of athletes use the split style. The lifter begins the power jerk with the bar held on the chest and shoulders in the same way that it would be held for a front squat. The bar rests primarily on the shoulders, the elbows are at the height of the shoulders and slightly lower, the chest is elevated with the torso in the universal weightlifting posture, and the athlete's balance is shifted toward the rear of the foot. In addition, in order to assure a clear path for the bar to be driven overhead, it is important that the head be pulled back slightly and chin tucked in (this chin tuck is important in the split jerk and military press as well)."

Learning to catch the bar overhead on straight arms in the snatch is a critical skill for the new lifter to learn, the following motions/positions in catching a snatch overhead are considered completely inappropriate and unsafe:

"The lifter leans back, fails to lock the elbows fully, does not bend the legs sufficiently, or jumps the feet too wide in catching the bar overhead.

To correct these errors, feedback on the position of the torso, which should be vertical or leaning slightly forward, armlock (the arms should be fully straight with the wrists back), an overhead squat width and depth of a quarter squat must be achieved.

Learning to "rack" the bar on the shoulders in the clean is important for the lifter. Here are some errors to avoid:

"Here the lifter leans back, fails to raise the elbows high, does not bend the legs sufficiently, or jumps the feet too wide in catching the bar at the shoulders. To correct these errors, feedback must be provided to help the athlete learn the correct position of: a) the torso, which should be vertical or leaning very slightly forward, b) the elbows, which should be at the height of the shoulders or slightly below, c) foot width, which should be front squat width, and, d) squat depth, which should be approximately a quarter squat."

Transitioning from a Power Snatch or Power Clean to a Squat Snatch/Clean is an important step in learning how to lift. Here is part of the description of how that should be done:

"Progressing From the Power Snatch and Power Clean to the Full Squat Snatch

Most lifters who have become comfortable with the power snatch and overhead squat will find the transition to full squat snatches is achievable with some practice. Lifters generally proceed to learn the squat snatch by warming up with power snatches with a moderate weight, each rep immediately followed by an overhead squat. Then the lifter tries to catch the bar progressively lower in the power snatch until, over a series of reps, sets, or workouts, the lifter is catching the bar in the full squat position. The lifter must be careful to keep the elbows locked on each snatch during this process. Some lifters will be able to manage squat snatching with light weights during the first workout they try it; most will be able to do it reasonably and comfortably within a few workouts, assuming the athlete has mastered the power snatch progressions and overhead squat prior to attempting the transition to the full squat snatch. But it will often take a while for the athlete's squat snatch to approach and then surpass the athlete's power snatch, although ultimately it should do this by 15 to 25%.

Progressing From the Power Clean to the Full Squat Clean

Most lifters who have become comfortable with the power clean and front squat will find the transition to full squat clean relatively easy to accomplish. This is done by having the athlete begin with some regular power cleans, with each rep followed by an immediate front squat. On the next set, have the athlete begin with a power clean, followed by an immediate front squat, and as the reps proceed have the athletes try to catch each clean in a progressively lower squat, immediately riding it down into of full front squat. For instance, have the athlete catch the first rep in a quarter squat and continue immediately into a full front squat. If that goes reasonably well, have the athlete catch the second rep in a one-third squat and continue immediately into a full front squat. This process proceeds in one set, or across several sets, to the point where the athlete is catching the bar in a near or actual full squat. Naturally, if the athlete is having difficulty with the lower squat, have him keep practicing the power clean and quick transition into the front squat until it gets smoother and smoother, and then move on to catching the bar in a progressively deeper squat. The lifter must be careful to keep the elbows up when catching the clean lower and lower, to assure that the elbows are always well clear of the knees."

The (Back) Squat is considered an essential exercise for most weightlifters - tips on back squatting safely:

"Back Squat

The squat, or back squat, is considered one of the most result producing exercises in the realm of weight training as it builds great strength in the legs and hips, the muscles with the greatest strength potential in the entire body. Many lifters find it to be a more comfortable way to perform squats than the overhead or front squat versions. However, the back squat is not as "specific" as the front squat or overhead squat in terms of carryover to the snatch and clean, so most lifters do some of their squats with the bar held behind the neck and the rest in the front squat position throughout their careers. In contrast, overhead squats are absolutely essential for beginners but more advanced lifters do not generally perform them very often, if at all because they do a great deal of squat snatching, which gives them ample practice in the low squat position and conditions their wrists, arms, and shoulders to handle heavy weights in the overhead position. The back squat proceeds in the same way as the front squat, except that the bar is placed on the tops of shoulders behind the neck, and is supported by the trapezius muscles, as well as the shoulders. It is recommended that the shoulders be drawn back and raised somewhat to, help support the bar and minimize contact with the vertebrae. The torso is held as upright as possible and the universal posture is maintained as the lifter descends into the low position, in much the same way as for the front squat. Then the lifter, maintaining the torso in an upright position, returns to a standing position. Spotters are strongly suggested for heavy squats, especially when near maximum and maximum attempts are being made. As has been explained earlier in this manual, safely missing in a front squat is relatively easy once the proper approach has been learned. Getting rid of the bar after missing a back squat is more difficult and risky, therefore, it is not suggested.

Spotters ready to assist the lifter in the back squat. Their hands travel downward as the lifter does so that they are always ready but never actually touch the bar unless the lifter cannot complete the lift

Some coaches have their athletes performing various kinds of jerks with the bar starting behind their necks. When this is done, we recommend:

A Note on the Every Popular But Dangerous "Bench Press" – Not An Event in Standard Weightlifting Competitions

The Bench Press is not a part of traditional weightlifting competitions, and most weightlifters don't do them, even in training. Unlike the events of weightlifting, the bench press does not enjoy a favorable safety record. In fact, a number of people die virtually every year doing bench presses. Good technique is important in the bench press, but such technique is beyond the scope of this document. However, we do want to provide a few guidelines to make bench presses safer.

First, never perform a bench press with a weight that is heavy for you without a capable spotter. When bench pressing, the barbell is above your chest, neck or face. Unlike the situation in weightlifting, where the diameter of large plates used for heavy lifts helps to assure that the actual barbell does accidentally crush the lifter in a, rare, emergency situation (because they touch the floor while supporting the bar approximately 8" above the lifter), there is nothing stopping the bar used in the bench press from crushing the body of the lifter, because the bench used is above the floor, so the lifter can be compressed between the bar and the bench, with no hope of a supporting surface (like the floor) saving the lifter.

Second, the lifter should never use supportive equipment (such as a "bench shirt") that permits the lifter to lift weights well above those he/she is able to lift with no supportive equipment, especially without a crew of trained spotters in readiness. A person who fails to return a bench press to the rack he/she took the barbell from to commence the lift may be able get the barbell of his/her body by tilting it to cause the weights to slide off (if there are no collars on the barbell – though a lack of collars can itself create a hazard in certain situations). Or he/she may be able to roll the barbell down the chest to the stomach and sit up (though neither of these movements are safe or pleasant). But when a lifter is using a weight well above his/her ability without supporting equipment, the risk is far higher.

Third, learn correct technique from an experienced instructor, while such technique cannot by itself help you to avert accidental injuries, it can lessen the chance that injuries for other reasons will occur while one practices these exercises.

Here is some guidance on the technique learning process in weightlifting:

"Beginners Must Learn Technique Using Light Weights – But Lighter Weights Also Make Them Stronger Faster Than Heavy Ones Would

One factor that we can never emphasize enough is that weightlifting training contains an amazing secret. The secret is that lifting light weights at the outset of training not only facilitates the development of sound technique, but the use of light weights at the outset also maximizes the development of strength and power. Research performed in the USSR decades ago demonstrated that beginners actually improved more quickly when they trained with light weights than when they trained with heavier loads relative to their strength and power level. This is not the case with more advanced lifters, who over time increase intensity and the volume of their training. It is very fortunate indeed that using light weights at the outset optimizes strength, power, and technique, because if it were otherwise, coaches and athletes would be perpetually faced with a difficult dilemma. How would they balance the need to stimulate the development of strength and power with heavy weights against the need to develop technique with lighter weights? Fortunately, no such dilemma exists for the beginner. Sound weightlifting coaching for beginners that optimizes both the development of technique, strength, and power involves the use of light weights, at least in high skill exercises. As the athlete develops, he/she will need heavier weights to stimulate continued increases in strength and power and to further refine

technique. But by that time the athlete will be in condition to perform training with these heavier weights and will have sound enough technique that the likelihood of a break-down in technique will be minor.

Repetitions and Sets

Virtually all weightlifting training is described in terms of weight lifted, and the ”repetitions” and “sets” it was lifted. In weightlifting, each time a weight is lifted, it is referred to as a “rep” which is short for repetitions. If a lifter lifts a weight, then lifts it again with little rest, he has done two reps. As soon as a lifter stops lifting for more than several seconds, he is considered to have completed a “set” of repetitions. If a lifter lifts a weight three times in succession and stops for a minute, he is said to have done one set of three reps. If he then lifts the weight for two repetitions and stops, he has completed another set, this time a set with two repetitions. For skill building exercises done with a stick, empty bar or other light weight, beginners typically perform five or so repetitions per set. If the athlete is really focusing on doing each rep separately and correctly, five repetitions requires between 10 and 30 seconds. This is long enough for an athlete to have to focus in one continuous effort. When heavier weights are being used, but the weights are still below maximum, a similar repetition scheme can be followed.

The exception to this is a compound exercise such as the clean and jerk. Because both the clean and jerk constitute strenuous exercises, performing five repetitions in the clean with moderate weights is acceptable, but performing 10 repetitions in the clean is generally too much, and so is performing five cleans and five jerks in the same set. The athlete is better served by counting cleans and jerks separately toward the five rep guideline, so that if a set of five reps is called for, the athlete does perhaps one clean and four jerks, or one clean and jerk followed by four cleans, or two repetitions of the clean followed by three jerks. Similarly, when the athlete is combining pulls with snatches, he/she might do two pulls followed by three snatches, for a total of five lifts per set. More advanced athletes who are lifting heavier weights which are closer to their maximums rarely do more than three repetitions and most do sets of two, or simply one repetition (aka a “single”). The latter is the most common. This is because as the weights grow heavier, fatigue is created by each repetition and such fatigue may impair the performance of the subsequent rep for the athlete who is not fully recovered from the effort of the first rep. This can lead to a breakdown in technique, or over fatigue in one area of the body, so performing reps in excess of two in the squat snatch, the squat clean, and the jerk is generally not advised, unless the weight lifted is well below maximum.

In contrast, in pure strength building exercises, such as pressing and squatting, it is not at all uncommon for athletes to perform 3 to 5 repetitions instead of singles or doubles. Although many athletes stick to the lower rep ranges in these exercises as well. Some coaches use five or even more repetitions during the preparatory stage, which is a stage explained later on in this text, for unloaded skill drills such as footwork in the jerk and when training strength movements like squats and presses. If five reps were performed during a certain part of the preparatory phase of training, three reps can be used as the athlete transitions toward lower reps in the competition phase. Three reps are often used throughout the training cycle for strength movements as well. One to two reps are used most frequently in the pre-competition training phase, the latter being more popular, and used by some athletes and coaches almost exclusively because only one rep is done in competition.

There tends to be an inverse relationship between sets and repetitions. That is to say that when repetitions are at the higher end of the scale fewer sets are generally performed. Alternatively, when the reps are lower, more sets are done. So if an athlete is performing squats with the top weight of the day, he/she might do three sets of five repetitions or five sets of three repetitions in both cases performing a total of 15 repetitions. Or the athlete might perform eight sets of two repetitions to reach a similar total. When doing singles, most athletes stop somewhere between 3 to 7 singles with their top weights of the session, depending on the intensity of the weight being lifted. Athletes who train primarily using singles tend to train more days or sessions per week.

In general, workouts with weights that are at least somewhat strenuous with respect to weight lifted (not pure technique training lifts with sticks and very light weights) start out being performed for one set in the first week or two of training. Then the lifter progresses to two sets for a week or two. Then three sets are performed for at least

a few weeks. Most lifters can make reasonable strength gains using three sets in strength exercises for quite a while. Ultimately, five sets or more may be performed, de- pending on the intensity and number of reps per set.

But it is rare for lifters doing more than single reps to do more than 3-5 sets, except for skill exercises, or the first exercise done in the day which will tend to have more sets because the lifter uses such exercises as a means of warming up gradually, by starting with an empty bar and slowly working toward the heaviest sets planned for that workout session. Exercises done later in the workout, especially if they do not require a great deal of skill and follow a related exercise, may require fewer warm-up sets. For instance, if a squat is being performed after cleans, only a few warm-up sets may be needed because the legs have already been warmed up in the full squat position.

Training Programs For Beginners and Intermediate Lifters

The training programs used by beginners, intermediate, and advanced athletes are quite different. The beginner focuses almost exclusively on learning fundamental technical skills, building a base level of fitness, and improving flexibility as needed. Intermediate athletes focus on developing more refined skills, individualizing their technique, improving weak points, and increasing strength and power. Advanced athletes, assuming they have done the hard work of developing sound technical skills, devote their time to reinforcing the skills already learned and making their execution more consistent, to perhaps making some minor refinements in technique centered around improving efficiency. Another major focus for such athletes is building strength and power. The training of advanced athletes is beyond the scope of this manual, so we will focus primarily on the training programs of beginners, with some attention given to the training of intermediate level athletes.

A Special Caution Regarding New Lifters Who Are Already Strong

From time to time you will train lifters who are strong before they take up the sport. This might be because they have trained with weights for another sport like football or powerlifting. It is particularly important to insist that such athletes learn how to lift correctly before “testing” their strength with heavy weights. That is because such athletes may be capable of lifting heavy weights before they condition their bodies to withstand the specific stresses of Olympic style Weightlifting, such as receiving a heavy weight in a deep squat position, and before they have the technical skill to lift such weights in the correct “groove.” When a person of average strength or a young beginner starts to train, he/she cannot lift a heavy weight, so if a mistake is made, it is made with a weight that is relatively light and the risk of an injury is very small. When a strong person who is unskilled tries to lift a maximum weight, that weight may be heavy enough to result in an injury. Therefore, beginners who are strong must proceed gradually as their skills develop rather than rushing to prove their “potential” by lifting weights they have not been properly trained to lift. In the meantime, they can certainly train and improve their existing strength levels after skill practice has been completed. However, this is only a good idea if the exercises being performed do not have movement patterns that are opposite to those used in Olympic style Weightlifting training. For instance, low bar squats with the torso leaning over, or Sumo deadlifts, where there is an immediate effort to straighten the back off the floor would not be conducive to the development of weightlifting technique because they reinforce movement patterns that are an anathema to good weightlifting technique. Lifters who are accustomed to such techniques can keep up their training on those exercises while they slowly learn new movement patterns and condition their bodies to lifting in the correct styles, eventually phasing out their prior lifting styles.

Weights Lifted During Early Training

At the outset, all exercises should be performed, especially by athletes with no background in lifting, with a broomstick, 1” PVC pipe, or similar item. It will become apparent with certain lifters, usually those with some background with weights, who have a good level of natural strength that a stick is so light the lifter has some trouble controlling it. In such cases, you may want to use a light or even regular bar to begin. However, whatever the starting point, a stick or a bar, the lifter needs to have a weight that is so light that he/she need not worry

about of lifting the weight at all, but rather just going through the correct motion with no fear of amiss. It must be remembered that overhead lifting, full squatting and splitting are not common in everyday life. Therefore, even with no weight, people find lifting even the body and a stick is a bit of a challenge. So the ideal beginner's weight is not hard but invites full focus. If movements are beginning to show some consistency and the athlete is experiencing no discomfort, weight can very gradually be added. But the coach must be ever vigilant to assure that the weight the athlete is lifting is not causing technical mistakes or significant misses.

New lifters will often lose their balance even with a stick, because the positions they are hitting are unfamiliar, but if the lifter is using a certain weight (even if it is light) and missing seems to be caused by the athlete's putting real effort into the lifting the weight, the weight must be reduced until good movement patterns are once again restored. This approach needs to be followed even with intermediate lifters. If technique was looking good up to a certain weight, then an increase resulted in a technique breakdown, the weight should be reduced until good technique is restored once again. However, if the breakdown seems to be related to fatigue instead of overloading (i.e., the athlete is not able to replicate the good pattern that was achieved on earlier sets even when the weight has been reduced), then the exercise should be discontinued and the athlete should move on to the next stage in the workout.

In movements that involve limited skill, such as the squat, the resistance used for higher sets should be high enough for the last repetition in the set to be challenging but not in jeopardy of being missed.

Only after the athlete has been training for several months is it appropriate to begin to test an athlete to ascertain the area of his/her true maximum, or something approaching it. When technique does break down, it is often because the weight was simply increased too much at one time.

For instance, let us assume that a lifter has been lifting 50 kg. correctly for several sets and then increases the weight by 10 kg. to 60 kg. At this point technique collapses.

It must be remembered that while the lifter added "only" 10 kg., that increase was a full 20% over what the athlete handled the set before. This is the equivalent of a lifter who is using 150 kg. jumping by 30 kg. to 180 kg. Very few lifters indeed would attempt such an increase, and even fewer would be successful with it. So percentages of increase must be considered, not just kilos, for beginners and intermediate lifters, something in the range of a 2-3% increase is more than enough.

There will be a stage where further technical progress can only be made when the lifter practices with relatively heavier weights. For instance, the split second timing required to bring a truly maximum weight under control can only be learned by practicing with weights that require such timing. But that is not the case for beginning or intermediate lifters, who should be focused far more on correct movements overall than split second timing, although reasonable timing should always be strived for.

For exercises where strength building is the primary focus, such as squats and front squats, once the movement has been learned, weights are gradually increased from week to week until, after a period of several weeks to months, the lifter can choose a day when he/she feels strong and attempts a maximum set of 3 to 5 repetitions to see what can be done when the athlete is pushing hard. Once the full lifts are being performed in the snatch, the clean, and the jerk, and reasonably correct technique has been stabilized, a similar process of maximum finding can be attempted in those lifts. This typically takes several months, which is longer than it takes to reaching a testing day in exercises like the squat or press."

Here is some are some of the kinds of guidance we provide to help assure safe training by coaches:

Effective Coaching

It is important for new coaches to learn a few general concepts about coaching in addition to learning the technical aspects of weightlifting technique and training. Therefore, in this section of the course, we present some of these basic and general concepts of coaching.

First – Do No Harm

Much like a physician, the coach's first commandment is to do no harm. The coach is there to guide the athlete through the exciting and positive journey of mental and physical development that comes through weightlifting training. Every athlete wants to win and so does every coach, but not at the expense of an athlete's health. Quite the contrary, proper training should enhance one's health and healthier athletes are far more likely to reach their potential. However, some coaches, in their effort to develop champion lifters, are tempted to push new athletes to the point where their health is endangered. This is both morally inappropriate and practically ineffective. One of the most common causes for lack of progress among lifters is injuries.

As has already been mentioned, Weightlifting done correctly is a very safe sport, particularly in terms of catastrophic injury to the head, spinal cord, and joints. Nevertheless, athletes, who fail to progress gradually, who do not take the time and exert the effort to learn proper technique, or who overtrain their bodies consistently, are subject to injuries that can both threaten an athlete's health and hamper progress significantly. Training for high performance in Weightlifting is very hard work, perhaps some of the hardest work one can ever do. But some coaches mischaracterize this hard work concept by repeating the old adage of "no pain no gain".

However, coaches need to understand that the word "pain" has a very specific meaning in that adage. It means there is no gain without profound mental and physical effort at times and, perhaps more importantly, single mindedness of purpose over many years with extended periods of minimal progress. Applying this kind of effort over the long term is a process some consider "painful". Yet without such excruciating effort, one cannot reach the highest levels of performance. And that notion is true.

On the other hand, the concept is inappropriately used by some as justification for trying maximum weights when one's technique is not been well developed, or ignoring clear signals from the body that one is overdoing it, or hurt (injured) in some key lifting muscle or joint. This is a complete misapplication of the concept, one that is dangerous. Beginners and intermediate athletes may experience muscle soreness and mild joint discomfort as their bodies adapt to their training. However, this should be an occasional occurrence and not a chronic situation. If pain is significant or lasts more than a workout or two, it is a critical signal to the coach that the athlete is progressing too rapidly for his/her own body, or that technique is faulty, or both. In such a case, it is important to identify the cause of the discomfort and eliminate that cause; at least until the discomfort has subsided. Then the athlete can resume training with a revised approach.

Progressing Gradually and Appropriately

Another aspect of positive coaching is to assure that athletes, especially beginners, proceed in a success orientated environment. That means introducing athletes to the sport with exercises that present a challenge, but have a reasonably high probability of successful performance with sufficient focus and effort. Such exercises are the progressions already discussed. Each of those progressions require less complex skills than the competition versions of those lifts, skills that can be learned by the beginning athlete, yet they present a significant challenge at the same time. In addition, the mastering of each progression will help the athlete to a step toward mastery of the complete skill set that is required to perform the full competition version of the lift

(the snatch, the clean, or the jerk). As the athlete masters each part of the full movement, further complexity is introduced. By proceeding in this kind of step by step fashion, the athlete always has an opportunity for success while at the same time experiencing an incremental challenge. Such a process also helps to keep the athlete's confidence and interest level high. As has been noted above, proper weight selection is a critical element of incremental improvement in the ability to perform the lift correctly. For beginners, starting all the basic exercises with a stick, light bar, or regular bar is appropriate. Weight can be added in low skill exercises, such as squats and presses, fairly quickly, but on the more complex lifts, use of the empty bar may continue for several workouts or several weeks, or more. The rule of thumb is to never add weight if the movement pattern is incorrect and reduce the weight if sets with lighter weight were being performed incorrectly and the addition of weight seems to lead to a technical breakdown. The only exception to this is a situation where the load is so light for that athlete that he/she cannot feel resistance at all and, as a consequence, flings the bar or stick around in artificial positions because of the exceptionally light load. In such a case, the load may be increased gradually until a more normal pattern of movement can be established.

Long Term Development

It takes at least 5-7 years of serious and progressively more strenuous training in the sport of weightlifting for an athlete to approach his or her ultimate potential. Athletes typically begin by training three days per week and, over a period of years, increase the frequency of their training to six days per week, often twice a day. The weights lifted by beginners are lower in terms of volume in intensity relative to what they will be later on in the athlete's career. Initially, the focus is on learning technique, and while for the wise lifter this process continues throughout much of his/her career, more advance training begins to include an emphasis on technical consistency, strength, and power development. In addition to going through the training development process already discussed, young athletes are going through the simultaneous process of growth and maturation. Their bones growing to their full length and density, their nervous systems are becoming more complex and refined, and they are moving toward their adult level of muscular development (all of these processes augmented by the training they are doing). As this maturation process unfolds, there are periods during which the young athlete is especially receptive to certain kinds of training stimuli and the knowledgeable coach works with the athlete to optimize these opportunities. There are other challenges as well. For instance, the athlete's individual mechanics change in connection with their bone growth, though not the fundamentals. Similarly, as the athlete's mind matures, he/she may experience changes in values and emotions from what the coach initially encountered. But, overall, growth and maturation present great opportunities. Long term development is a complex subject well beyond the scope of this manual, so we urge new coaches to learn more through some of the references that appear at the end of this manual, and through more advanced USAW courses.

Keep Your Instructions Simple and Succinct, and Prioritize Them Carefully

Coaches who are well educated often have a tendency to use technical jargon when they speak to athletes. Such coaches should use such terms only during informal or classroom instruction if they are sure that everyone in the audience understands the jargon they are using, not during training sessions. For instance, instead of stating, "Correct execution of the power position entails the activation of the stretch reflex to extend the quadriceps and plantar flexors;" the coach might say, "As the bar reaches the power position, you explode with your legs to throw the bar upward as quickly as possible." When the coach is introducing an exercise for the first time, it is appropriate to name the exercise and explain its key characteristics and purpose. Also explain the use of any special equipment that is needed to perform the exercise and any special safety precautions that are appropriate. Then demonstrate the exercise to the athletes, while a narration explains the salient points of the exercise, such as the start position, key movements occurring during the exercise, and when the exercise ends. The introduction should also explain how it helps to improve the athlete's performance (i.e., why the exercise is being done).

In addition to keeping instructions simple and succinct, it is important for the coach to prioritize instruction. For instance, a coach may be able to see that an athlete doing many incorrect movements when that athlete

performs an exercise. There is often an urge to point out all of those mistakes at once. But that is, in itself, a mistake. Changing movement patterns is no small challenge for the brain of an athlete. Focusing on a single error presents ample material for the athlete to focus on. Asking the athlete to correct multiple errors at once is generally expecting too much. Exceptions to this are instances where correcting one fundamental movement pattern will address multiple errors at once. But even in those cases athletes are being asked to focus on that single fundamental compared with focusing on all of the resulting corrections. Therefore, it is important to choose your area of focus appropriately. The first and most absolute guideline is to concentrate first on errors that affect safety. In the case of such an error, either correct it quickly or change the exercise so that the error in question will no longer affect safety. For example, if an athlete is not locking the elbows when a snatch is overhead in a squat position, that can be dangerous. Therefore, either that problem needs to be corrected immediately, or the athlete needs to perform power snatches until the lockout problem in the squatsnatch can be corrected with various forms of stretching, the practice of overhead squats and perhaps repositioning the elbows so that the effects of a poor lock are mitigated.

Second, concentrate on the most fundamental errors, i.e., those that cause one or more additional errors. An example is an athlete who is very inconsistent in the pull and the bar is not close to the body, while at the same time the back is rounded. In such a case, it is likely that correcting the rounded back will serve not only to protect the athlete's back from injury with a more mechanically sound position but, with the correct torso position, the bar will likely come closer to the body and consistency will improve. This is because a torso that is rounded will likely round to different degrees from lift to lift, but the universal posture of weightlifting is always the same as it contributes to the development of consistency. Only after the safety related and more fundamental errors have been corrected should the coach's focus be turned to correcting other errors, in priority order.

Training Alone, Especially by Beginners, Should Be Discouraged

Although it is not unusual for advanced lifters to train alone at times, this practice should be discouraged for any lifter and simply not permitted by beginners. Advanced lifters know what they are doing and they proceed along with reasonable safety, although the presence of a coach or training partner is always preferred. In the case of beginners, a lack of knowledge of sound training principles and technique absolutely precludes unsupervised training. If an athlete must train remotely from the coach from time to time, it may be possible to have a parent or other athlete provide appropriate instructions and supervise the workout. However, maximum attempts should never be made outside the presence of the coach, and the planned workouts must be adhered to unless conditions encountered during the workout suggest that the workout should be shortened, lightened, or terminated.

Follow the Planned Program

It is important for athletes to follow the planned program. However, following the plan does not mean slavishly carrying out every set of every exercise that was planned if there is some good reason to modify the plan. For instance, if the athlete is showing signs of significant, or is consistently not performing lifts correctly, or if any pain is encountered during the performance of the lift or exercise, the workout may be shortened or lighter weights may be substituted. Alternatively, a different exercise may be substituted. In extreme cases of apparent fatigue, or where pains persist or worsen, the workout may even be terminated.

There may also be times when the athlete will go heavier or perform more sets of an exercise than was originally planned. For instance, if the athlete's technique is looking very good and the weight relatively light, a heavier set or two might be taken. Alternatively, if the athlete appears to be grasping a technical learning point for the first time, an extra set or two might be added to provide the athlete with the opportunity to reinforce the learning of that point. But, in general, the workout plan should not be deviated from, and especially not because the athlete sees other athletes doing something different or just because the athlete "feels like" doing something different.

The development of weightlifting ability is a process that occurs over many training sessions and requires patience. Therefore, consistent application of the plan is important for long term development.

Dealing With Injuries and Other Health Issues

While serious injuries are quite rare in Weightlifting, the possibility always exists that such an injury can occur, or that another emergency health problem that is unrelated to weightlifting can arise during training Therefore, it is important to have a plan to summon emergency help to the lifting venue immediately, and it is useful to have emergency contact information for each athlete. For less serious injuries, such as skin abrasions and mild strains or sprains, having a first aid kit and ice on hand is a good practice. From time to time, skin tears on the hand or abrasions on the shins result in blood being deposited on the bar. In such instances, a disinfectant that kills blood borne diseases, such as Clorox (not Clorox or other wipes, which may not contain Clorox), should be used to clean the blood from the bar. Once this has been done, the bar can be dried and then have light layer of chalk applied so that athletes will not have to deal with a slippery bar.

Here are some tips for using equipment properly and having athletes where the proper clothing for training:

Equipment and its Proper Use

In this section of the manual we will be discussing equipment typically used for training weightlifters. One important piece of equipment has already been discussed at length in the chapter on the exercises used in weightlifting training — the squat rack, so we will not repeat that discussion here. Instead we'll discuss other important equipment that has already been seen in use but not separately explained, such as platforms, barbells, organization of the training space, and the attire of weightlifters. Good weightlifting equipment generally lasts for a long time but all such equipment must be used correctly and maintained. Therefore, regular inspections of the structural integrity of equipment must be carried out, and if any equipment used begins to lose its functionality, it must be repaired or replaced promptly.

Platforms

The practice of weightlifting requires very limited equipment and space, and the cost of such equipment, which lasts for a very long time, is reasonable. The basic training space is typically referred to as a training "platform." In the USA, this is typically a surface that is 8'x8'. It is generally made out of wood and stands 1.5" to 3" high. It must be completely flat and level, firm and have a non-slippery surface that allows for foot movement by foot sliding, but also provides solid footing when the feet are placed in their final position for catching the bar at arm's length or on the shoulders. The center of the platform is where the lifter stands. Nothing should ever be on the platform except the lifter and the barbell, no plates, no racks, no blocks (unless such equipment is being used for the exercise currently being performed — the use of blocks is explained in more advanced courses), and never people (except spotters being used as already described, or a coach who is supplying hands on instruction regarding a lift, with such instruction never occurring when the lifter is using more than light weights). This code must be strictly enforced by the coach because the safety of the athletes hangs in the balance. One or more of these items on the platform, and an endless number of others, can cause an athlete to trip, be struck by a ricocheting barbell, be caught between the barbell and the object, or damage the barbell or other object.

The ceiling in the room that houses the platform should be approximately 8' high to allow for even relatively tall lifters to clear the ceiling with a weight overhead. Platforms of the kind described above should have at least a 24" perimeter on all sides between the platform and walls, weight racks, and other platforms. The front and rear areas of this 24" perimeter afford some space for the barbell to land when a lifter who runs to the edge of the

platform to control a lift cannot keep the barbell from falling. Lifters should be taught that if, during the execution of a lift, they ever begin to approach the end of the platform, or an object like a rack, it is better to drop the lift than to risk a collision with the rack or a misstep in walking off the platform. Many newer platforms are set flush with the floor to avoid this latter kind of risk with the thickness of the platform itself being sunk below the floor level.

Barbells

Over time, the design of barbells has been improved to maximize the performance and safety of lifting. The bar itself turns freely within outer sleeves upon which the plates are loaded. This freedom in turning the bar, no matter how heavy the weight being lifted may be, facilitates the turning over of the hands from the pulling to catching position in the snatch, and the hands and elbows from pulling to racking in the clean. Modern barbells are built to flex and return to their straight position when heavy loads are lifted and this "spring" of the bar can be used to increase performance (a topic beyond the scope of this manual). Finally, the diameter of the plates has been designed both to position the bar at a height that makes it relatively easy for a lifter to assume a good starting position, and to keep the bar clear of the lifter in the unlikely event the lifter cannot drop the bar clear of the body when a lift is missed. In such cases, if the lifter lies flat and turns the head to the side, the bar will not contact the athlete's body (although, as has already been explained, there are much better ways to miss that should be learned early on in the lifter's career). Barbells should always be correctly and evenly loaded. It is always the responsibility of the athlete about to lift to assure that the barbell has been loaded correctly. In this way, there is no doubt about the weight to be lifted and who is responsible for assuring that it is correct. This is a good practice for competitions as well, because a misload can occur, even at the highest levels of competition, and sometimes only the athlete notices the mistake before the lift is attempted. Most modern barbells that are designed for Olympic-style weightlifting have tight enough tolerances between the plate holes and bar sleeves that the plates will not generally shift when the barbell is being lifted without the use of collars. An exception to this occurs when humidity is high, which can cause even tightly machined plates slide on the outer sleeves of the bar. In such a case, collars should be used. It is also appropriate to use them for maximum attempts, or if for any reason the tolerances between plate holes and bar sleeves are not tight enough to prevent plate shifting while lifting or dropping the bar. Bars should be straight and the sleeves on either end of the bar that receive the plates must turn freely around the bar. Bars also should generally be stored horizontally instead of vertically, to assure that inappropriate sideways forces are not applied to the sleeves or bearings of the bar.

The Training Room and Other Equipment

The training area should be well heated and not drafty. It should be cleaned regularly and plates replaced on racks or other designated storage areas. As was suggested earlier, equipment should be checked regularly to assure that squat racks, blocks, and other apparatus are stable. Any pins used with them should not be worn to the point where they are weakened or bent. "Chalk" or magnesium carbonate is an important training provision. Athletes use it to create a thin coating on the hands before attempting heavy snatches and cleans, which helps the athletes to maintain a firm grip on the bar. It can also be applied to the shoulders before performing heavy jerks, to help keep the bar from sliding on the shoulders during the dip for the jerk. Rosin is also often used for the feet when athletes are lifting on a hard wooden surface to assure that the athlete's foot will not slide once it contacts the platform. A "squat" rack, power rack, or cage is one final required piece of training equipment, the use of which has already been explained in this manual.

Organize and Teach the Athletes and Observers

When you are training groups of athletes larger than 4 or 6, it is best to divide the athletes into groups of 3 to 5 to a platform. With this arrangement, one athlete can lift while the others on that platform observe and, in the very limited cases already noted, spot the lifter. In addition, the lifter who is about to lift can focus solely on lifting while the others load the bar for that lifter, observe and cheer the lifter on. For instance, if lifter A is

preparing to lift, lifters B and C load the bar. When lifter A has completed a lift, lifters A and C load for lifter B. When lifter B is done, lifter C prepares to lift and lifters A and B load the bar.

Lifters not lifting at any particular point in time should learn never to walk in front of an athlete while that athlete is performing a lift or is at the bar preparing to lift. There should be no idle chatter, music, or other distracting noise. Earphones should not be used while lifting as they could distract a lifter, or preclude his/her hearing instructions from the coach, or hearing a warning of an imminent danger, such as walking back off the platform or colliding with another lifter.

When there is more than one platform, the coach moves from platform to platform during the workout so that each group gets attention multiple times during the training session. It is important for the coach to maintain an awareness of what is going on at all other platforms, so that if something unsafe or completely inappropriate develops, he/she can address whatever is occurring immediately.

Observers should remain quiet, unless they are cheering the lifter on. There should be no coaching by observers. If they have a suggestion, it can be relayed to the coach but never directly to the lifter, and especially not immediately before the lifter is about to lift, as any suggestion may conflict with or at least distract an athlete from instruction provided by the coach. It is also extremely beneficial to teach each and every lifter how to coach others. Not only will such instruction help athletes to better understand what the coach is trying to do with them, but it will enable the coach to handle athletes, with help from many “assistant coaches”. Each athlete who learns to think like a coach will gain a greater grasp of technical concepts that will likely prove useful to his/her own lifting. If there are three or more lifters on a platform, lifter B who will immediately follow lifter A, who is currently lifting, should generally be exempted from observing the current lifter A so that lifter B can concentrate on his/her own upcoming attempt. One additional point on an athlete coaching is appropriate. No actual coaching is to be done without the express permission of the coach, because thinking about what you would do as a coach is very different from coaching. The athlete can relay any suggestions to the coach, but the coach must decide whether those instructions should be utilized and when. This practice is followed so that the athlete does not have to concentrate on two different sets of instructions at the same time.

Footwear

Weightlifting shoes are perhaps the most important piece of equipment that every lifter owns. Good weightlifting shoes enclose the entire foot (are never sandals), are solid, and not spongy or shock absorbing. They are flexible, reasonably lightweight and have a substantial heel (approximately 1”, often a little more), and are nonslip. Their use is mandatory in competition and should be in training. However, new lifters can use other athletic footwear, but never sandals, as long as the shoes do not have spikes or nubs that could catch when the lifter’s feet are sliding or skipping along the platform to reposition them. Lifting shoes provide a firm footing and help the lifter to assume a full squat position comfortably. They should be kept in good repair by not letting the heels wear significantly or permit the soles to become slick. Shoelaces should be kept in good repair. Check them carefully before any competition because a break in a lace prior to a heavy lift can be a real problem. They should fit the foot relatively closely but not feel tight or pinch, nor should the toes contact the front of the shoe when the feet are stamped down.

Straps

Straps are used by many lifters, particularly those who train every day for exercises such as snatches and pulls. They can help to reduce the stress on the skin of the palms and fingers as these areas may become irritated by frequent training. However, lifters must be careful not to become overly reliant on the use of straps to support the grip. This is because straps are not permitted in competitions and lifters must be able to lift maximum weights without their use. One other point should be made regarding straps. They must never be wrapped around the bar more than once. This helps to assure that they can be released quickly in the event of a missed lift

by simply opening the hand. It is strongly recommended that straps not be used in the clean, since if the athlete should have the misfortune of catching the clean with low elbows and compress and trap the elbows and wrists on the legs. In such a case, getting rid of the bar when it has been secured with straps can be difficult. Use of straps on snatches is less problematic and more common.

An example of a good weightlifting shoe

Preparing to wrap the strap one and only one revolution around the bar

The bottom of the strap loops upward around the bar and under the palm

The strap is pulled taut so the palm is against the bar

The hand closes securely around the strap and bar

Clothing

It is important for lifters to wear appropriate clothing in training, and special clothing such as a singlet when they compete. The latter will be discussed later in the section of this manual that covers some of the more important and basic rules of Weightlifting. It is advisable for lifters to wear full-length sweatpants or tights in training. Shorts can be worn over these. The purpose of the full-length pants is to keep the legs warm and to reduce the likelihood of skin abrasions from the contact of the barbell against the shins and thighs. At a minimum, long socks and bicycle type shorts should be used for this purpose. Stretchable clothing that is not restricting (e.g., no jeans) and is relatively formfitting is important, so that the lifter can move freely and the bar cannot be caught on the clothing. For the same reason, lose waist strings should be tucked into the waistband.

Hand Care

As a result of the skin irritation that occurs from extended lifting with the barbell in the hands, calluses will build up on the hands, most typically on the palms near the bases of the fingers. If the calluses become too thick, they will catch on the bar and may be torn loose from the underlying skin. While such an injury is not serious in nature, it is quite painful. Apart from the immediate discomfort of the pain is the problem that further lifting will be difficult, as the athlete is distracted by that hand pain. Therefore, it is appropriate for lifters to reduce the thickness of calluses by using a pumice stone or a similar appliance after taking a shower, to pare down the calluses. Use of non greasy skin lotion after a shower can also help keep the skin on the hands in good shape (e.g., CeraVe or Eucerin Daily Skin Balance lotions). Hand care is particularly important prior to competitions, as a callous tear during a competition can undermine competitive performance by distracting the lifter.

First Aid Equipment and an Evacuation Plan

It is always good for any training facility to maintain a first aid kit with such items as band aids, soap, and antiseptics. Having someone on hand who knows CPR is a good idea and having a defibulator is even better. But perhaps the most important safety precaution for any training facility is having an evacuation plan, so that anyone who falls ill or becomes injured can receive trained medical attention as rapidly as possible.

A Closing Summary of Some Key Points Made Above:

1) Despite its enviable safety record, most accidental injuries that do occur in the sport of Olympic-style weightlifting result from preventable causes, such as improper training, poor technique and/or improper use of, or faulty, equipment,

2) Assuring safety is the first job of the coach and athlete,

3) No training should begin without medical clearance,

4) Athletes should not perform an exercise under significant load unless they have sufficient flexibility to perform that exercise correctly (have an adequate range of motion to assume correct positions throughout the lift),

5) Learning proper technique is essential from day one for purposes of safety and having a successful weightlifting career,

6) The almost exclusive focus of early training should be on developing correct technique, and this focus is maintained for months, if not years

7) Only the standard/opposing grip or, hook grip should be used in weightlifting – never the "thumbless" grip

8) Learn to maintain the "universal" posture of weightlifting throughout every lift

9) Learn to miss correctly from the first workout

10) Use spotters when squatting, or performing any exercise that requires the barbell to be returned to the shoulders, behind the neck, after the completion of a lift

11) Generally keep repetitions to three or less on technical exercises (e.g., snatches or cleans) and five or less when performing strength exercises (e.g., squats) and never continue repetitions if form is breaking down,

12) Beginners should train, especially on the technical exercises, with very light loads (often just a stick)

13) Lifters, most especially beginners, should not train alone or exceed the planned exercises/weights,

14) Lifting while hurt is not what the champions do or should do – pain is a warning that needs be addressed,

15) Lifting platforms should be completely flat (no ridges, bumps or gaps to could interfere with sliding the feet), level, but not slippery, so that the athlete has a solid footing in any foot placement position

16) Platforms should be at approximately 8x8 feet square, or larger, and have approximately a two foot clear perimeter around them (e.g., no racks on boxes)

17) Nothing should be on the lifting platform other than the lifter and barbell loaded to the weight being lifted,

18) Bars should be straight, rotate smoothly and have the same plate load on each side of the bar

19) Lifting straps should never encircle the bar more than once and should not be used for cleans

20) Clothing should be close fitting but non-restrictive

21) Weightlifting shoes should be used – proper shoes are: supportive, enclose full foot, have an approximately 1" heel, flexible and lightweight, and do not have any nubs/spikes that could impair foot sliding, yet they provide not slip footing when in contact with the platform