PRINCIPLES OF PROGRAM DESIGN

THE WHY'S AND HOW'S

The Demands of Hockey

To understand hockey strength and conditioning you have to be aware of the unique demands placed on an ice hockey player. In order to be successful in hockey, besides having exceptional skills, players should participate in a program that will enhance their strength, power, speed and agility. Ice hockey has a number of unique features. During the game, players must accelerate and decelerate rapidly in shifts that last 30-45 seconds on average. The game is played in shifts and the player rests sitting down. In addition, hockey players must endure extremely high force collisions due to the high speeds attained in skating.

Although many so-called authorities will tell you the energy supply for hockey may be primarily aerobic, the trained observer may draw a different conclusion. Forwards generally play in a rest-to-work ratio in the area of 3:1, while defensemen use a rest-to-work ration of 2:1. Most sports can be classified somewhere between low intensity and high intensity activity. Low intensity activities can continue for long periods of time. However, high intensity activities can proceed only in short spurts interspersed with regular rest intervals to facilitate recovery. Using these definitions, hockey places towards the high intensity end of the scale.

The off-season strength program should focus on preparing both the muscular system and the neuromuscular system. Exercise selection should include explosive weightlifting movements, multi-joint lower body exercises, upper body pulling and pressing movements, and a full range of trunk movements.

The off-season conditioning program should focus on speed development and interval training. We tell our athletes: “train slow, get slow.” Conditioning, speed development, and strength training should be specific to the sport of ice hockey. Speed training on land, using similar intervals to the game, but some conventional aerobic training should also be done.

The Basis of Our Program

There are two phases to building fitness for hockey:

- Improving general fitness or getting "into shape"
- Hockey-specific conditioning

Getting in shape means improving aerobic power, flexibility, strength and diet while decreasing body fat and increasing muscle mass. The second phase requires conditioning specifically for the demands faced on the ice. Exercises and drills are selected and completed with specific exercise prescriptions so that your physical and physiological development best suits the game of ice hockey. We are going to work on developing a good base of strength and conditioning before moving onto the development of sport-specific attributes.

Aerobic and Anaerobic Fitness

Your body has different energy systems that work together to fuel your hockey performance. Although hockey is primarily an anaerobic sport, a strong aerobic base allows you to work longer and at a higher intensity by postponing fatigue and allowing a speedy recovery. The aerobic system provides energy for low- and moderate-intensity exercise and helps the body recover from fatigue. For example, a 1-hr bike ride at a comfortable pace is fueled mainly by the aerobic system. Hockey is characterized by repeated bouts of high-intensity action interspersed with periods of moderate activity and rest. **The aerobic energy system supplies only a small portion of the energy needed during moderate activity, but it is critical for efficient recovery between play stoppages and during time on the bench.** Aerobic conditioning can be improved through submaximal continuous exercise and through high-intensity, intermittent exercise. Submaximal continuous exercise at 75-80 % of your maximum heart rate for 30 to 60 minutes will improve your heart's ability to deliver oxygen to the muscles for energy and will allow the body to recover more quickly from intense efforts. Intermittent aerobic condioning, using a series of 2-3 minutes if higher intensity exercise interspersed with 2 to 3 minutes of rest builds up the aerobic supply system and increases the muscles ability to extract oxygen from the blood.

There are two different types of programs to build aerobic fitness:

- Continuous, moderate intensity, long duration programs
- Intervals of high intensity work followed by easy recovery intervals of 1,2, o4 3 minutes grouped into various packages of time

For interval programs, the training load can be increased in a number of ways:

- Increasing the duration of work intervals from 1 to 2 to 3 minutes
- Increasing the intensity of each work interval
- Decreasing the time of the recovery interval
- Increasing the intensity of the work interval
- Increasing the number of work/recovery intervals

On the other side of things, the anaerobic systems produce energy very quickly to meet the demands of intense action, such as the slap-shot, sprinting on a breakaway, or stops-and-starts while penalty killing. These systems utilize the ATP-PC (phoshagen) system and the glycolytic system for energy. In hockey, although the game itself lasts for about an hour, the players are usually only on the ice for high-intensity shifts of approximately 30 to 45 seconds (ideally). Most teams have 3 to 4 lines, allowing for a 1:2 or 1:3 work-to-rest ratio. However, depending on the situation (e.g., penalty killing, power plays or missing player), key players often work within a 1:2 or 1:1 work-to-rest ratio.

Due to the nature of hockey, it is important to train anaerobically. The ATP-PC system provides immediate energy, in the form of ATP, for short-term, high-intensity activities for up to 10 seconds. The glycolytic system provides energy for longer high-intensity activities ranging from 10 seconds to 2 minutes. This level of training corresponds directly to the physiological requirements of the game.

To develop anaerobic energy systems, we will utilize sprint interval training. These involve full-out, high-intensity, high-speed intervals followed by rest or active recovery. We will use sprints ranging from less than 10 seconds to around 30 seconds, with a 1:2 or 1:3 work-to-rest ratio. [For example, a 1:2 work-to-rest ration involves sprinting all-out for 30 seconds, active recovery for 1 minute, then sprinting full out again.] Towards the end of the training program, you should make an attempt to progress to 1:1 work-to-rest ratios, especially if you are a defenseman or part of the special team units.

Strength Training

Since hockey is an aggressive, physical contact sport, strength training is an essential component of the off-season program. Strength training is an anaerobic exercise that uses the ATP-PC system for energy. It is beneficial for hockey because it recruits and develops the type-II fast-twitch muscle fibers, which are the ones used for speed and strength movements. There are a number of benefits to incorporating strength training into your off-season conditioning program:

- Strength means bigger muscles protecting joints and soft tissue from injury
- It makes you stronger on the puck
- It helps you establish position against opponents away from the puck
- It helps you move opponents in territorial battles

- Higher strength means greater ability to repeat forceful movements during struggles or contact
- Abdominal strength allows you to transfer momentum from the lower body to the upper body and protects the low back
- Leg strength is the first step in improving leg power and explosiveness

Upper-body strength contributes to shooting and puck control, as well as warding off opponents. Strength through the chest, shoulders, arms and back is used during body checking, to clear the slot, or when containing your man along the boards. Your upper-body movement is an extension of the movement from your legs and torso – thus, overall strength is crucial to support the upper body. For instance, a body check should initiate with the legs and hips and followed through by the shoulder. Even when you are pinning an opponent against the boards with your arm, your torso region is contracted to stabilize the effort, while the legs continue to balance the body and drive toward the opponent. Leg strength is important to skating strides, acceleration, turning and stopping. It contributes to the first-step leg power for a strong push-off and anaerobic endurance for repetitive strides. Building leg muscle mass also helps lower the body's center of gravity, assisting in dynamic balance and stability. Other muscles are very important to skating as well. The torso serves as the body's base, its pillar, from which all movement stems. The torso initiates, assists, and stabilizes movement.

The type of strength training exercises we want to build up to in this program are full-body, multi-joint and explosive movements since they more closely resemble the movements experienced in hockey (skating shooting body checking). The exercises will be grouped into 5 categories:

- Olympic-style lifts
- Upper body pull
- Hip and leg thrust
- Upper body push
- Trunk stabilizers

The Olympic-style lifts are beneficial to a strength program because they add power production, which is difficult to produce in other weight training devices. Similar to all hockey related movements, they utilize most of the body's musculature and require timing, coordination and balance, which provide a direct link to hockey movements such as shooting. The remaining 4 categories are all multi-joint movements that at as a supplement to the Olympic style lifts to develop full-body strength.

Power and Speed Training (Plyometrics)

Plyometric training for the sport of ice hockey can have a great impact on the athlete's on-ice performance.

Why train for explosive power and speed?

- Explosive power allows you to start, stop and react quickly to elude a defender or to stay with your check
- Fast accelerations allow you to capture or move to space on offense
- Fast accelerations and speed allow you to establish position and reduce space for better defense
- Fast accelerations and high speed give you a better transition game
- Higher speed gives you more momentum and an advantage in collisions
- Higher speeds can be transferred into greater shot velocity

Plyometrics bridge the gap between strength and speed. If you want to improve your athletic performance, the transition from strength training to power training will play an integral part in your success. Here's why...

Maximum strength takes 0.5 to 0.7 seconds to produce. Yet most explosive, athletic movements occur much more rapidly. Whether your objective is to accelerate faster, shoot the puck harder, move around the ice more quickly, jump higher or throw further... The key to improving your power and performance lies in generating the highest possible force in the shortest possible time...

Plyometrics play a primary role in this training objective. Ideally you would first develop a high level of maximal strength before starting a plyometrics program. This gives you the greatest potential for peak power. The underlying principle of plyometric training is the stretch-shortening cycle. Very simply, as a muscle stretches and contracts eccentrically (lengthens) it produces storable elastic energy. If the muscle then contracts concentrically (shortens) this elastic energy can be used to increase the force of the contraction.

A good example is jumping...If an athlete jumps vertically they will invariably dip down just before takeoff. Quickly lowering their centre of gravity stretches the working muscle groups allowing them to contract more forcefully for the jump. In essence a muscle stretched before it contracts will contract much more forcefully.

What role does plyometrics play in all of this?

Plyometric training places increased stretch loads on the working muscles. As the muscles become more tolerant to the increase loads the stretch-shortening cycle becomes more efficient. The muscle stores more elastic energy. It can transfer from the eccentric or stretching phase to the concentric or lengthening phase more rapidly. This is the key to generating peak power.

Lower body based plyometrics will be the dominant in our training program as more of the power needed in the sport of hockey comes from the lower body. The hips, gluteals, quadriceps and hamstring areas must be strong and flexible to maximize performance and implement a hockey plyometric program. It is these muscle groups that are key to developing a strong powerful skating stride. In summary, plyometrics are exercises that enable muscles to reach maximum strength in as short a time as possible. In other words, these exercises develop power.

For our program, limited plyometric training will be employed within the Monster Circuit. Should you desire a more intense training program, come discuss this issue with me.

Agility and Quickness Training

Agility training is an important component that often seems to be neglected. The purpose of including agility drills is to improve footwork, quickness and mobility. Hockey includes forward, backward, and side-to-side motions as well as constant changes in direction which call for much starting and stopping. The agility workouts include starting and stopping movements in all directions.

Quickness is characterized as explosive acceleration from a stationary position. It is the key to beating an opponent to the puck and is demonstrated over very short distances. A "quick" athlete can accelerate to their top speed in a very short period of time, can change directions and re-explode to top speed, and has a fast reaction time. All these attributes will help the hockey player win foot races to the puck, will help when attacking with the puck, and will help defenders react to movements by puck handlers. Quickness, speed, and agility training are all inter-related and are designated as "neuromuscular" training. These drills will help the athlete react quicker and will enable the athlete to control the muscle with better co-ordination. Agility is important, because it increases the ability to move in multiple directions as required in hockey. Neuromuscular training is skill training. The emphasis is on quality, not the quantity of training. Drills must always be performed in a rested state and the training session should be stopped when fatigue prevents proper technique. Athletes should progress in this type of training by using quicker feet in each successive session.

To increase the applicability of the drills to hockey, focus on horizontal and lateral movements and single-leg drills. Also include pivots (turning front to back), auditory or visual cues within the drills, and try as much as possible to incorporate a sport skill (i.e. puck handling or shooting at the end of the drill).

The intensity of the agility workouts can be increased by using the progressive overload principle. As the players improve their performance in the agility drills, the number of repetitions and the distance covered should be increased. To provide variation and prevent staleness in training, use different combinations of drills.

Warm-up and Stretching

Prior to engaging in any strenuous activity you should warm-up properly. A proper warm-up will help prepare your cardiovascular system for the activity, while lessening the demand on the system. It will also increase the range of motion of the muscles, thereby reducing the likelihood of injury. The warm-up will also provide you with an opportunity to psychologically "focus" on the upcoming activity be it a game, practice, or training session.

Your **warm-up** should consist of the following:

1. **Stretch** - a brief general stretch.
2. **Skate, jog or cycle** - to increase your core temperature and stimulate your cardiovascular system.
3. **Specific Stretching** - slow stretching specific to the demands of the activity.
4. **Sports Related Warm-Up** - this involves the skills and drills specific to the activity that you will be participating in.
5. **Brief Rest** - prior to the event, this should also include the ingestion of fluids.
6. **Event** - game, practice, or training session.
7. **Cool-down** - should include an easy jog or bike ride to help metabolize and re absorb the waste products of muscular activity, as well as a stretch to help regain the full range of motion and prevent post activity stiffness and muscular soreness.

Stretching is a key component of any conditioning program. It is important to do a full-body stretch every day and to hold each stretch 30 to 60 seconds. Increasing a hockey player's flexibility is critical because it can reduce muscle soreness and lessen the chance of injury. Flexibility also enhances a player's overall fitness.

Principles of stretching effectively:

- Stretching should be done before and after practices, training and games.
- The stretching effect is best when done as soon as possible before or after exercise.
- The relaxing reflex is activated when the stretch is slow, goes to the end of your range of motion, and is help for at least 10-15 seconds.
- Once you have stretched to the end of your range of motion, hold it there and contract back against your hand or a wall. Then move it to the end of the range and stretch again. This added contraction increases the ROM.
- Use a forced exhale in your breathing to assist in the stretch.
- Stretch each joint and muscle you will use or did use – the relaxing effect is specific only for the muscles which are stretched.

See Appendix D for sample stretching circuit.

TO FULLY DEVELOP HOCKEY PLAYERS AND MAXIMIZE THEIR POTENTIAL, IT IS IMPORTANT TO INCLUDE ALL OF THESE COMPONENTS IN AN OFF-SEASON STRENGTH AND CONDITIONING PROGRAM.

Principles of Strength and Conditioning

Certain fundamental principles must be adhered to when designing workout programs to produce the desired results. The principles that we will focus on are:

- Specificity
- Overload
- Progressive overload

The first principle deals with designing a program to get the kind of gains you want, because nothing happens by accident. The second principle deals with making sure that you continue to make the gains you want from one workout to the next. The final principle makes sure that you continue to make gains over a lifetime of training without becoming injured or burned out.

The Principle of Specificity of Training

The principle of specificity is deceptively simple and it drives all the gains that one makes from a strength training program. Specificity states that the body makes gains from exercise according to how the body exercises. This principle is important because applying it correctly will allow one to have a focused, efficient, effective program that will lead to the desired gains. Failing to apply it will result in wasted energy and time, and it will result in frustration as gains do not materialize.

When developing a conditioning program, you should consider the following:

- the movements to be trained;
- the muscles and joints to be trained;
- the energy system(s) to be trained; and
- the speed of movement.

Strength and conditioning programs can be designed to enhance movements that are performed in athletics. This is important because this may improve an athlete's performance. It may do this by strengthening the movement; it may also accomplish this by allowing the athlete to practice the movement with resistance. It is also important because it can maximize an athlete's training time and be used to help prevent injuries in the athletic event. A number of questions should be considered to help with this:

Is the activity performed standing?

What joints perform the activity?

Do the joints work together or sequentially? If sequentially, what is the sequence of movement?

What motions are performed by each joint?

For example, basketball players want to become better vertical jumpers. The vertical jump is performed standing up. Both feet are in line and approximately hip-width apart. The descent is performed by pushing the hips down and back, followed by knee flexion until a quarter squat has been achieved. There is little or no pause at the bottom of the squat. The athlete then explosively extends the knees, hips, and plantar flexes the ankles until he or she has left the ground. There are a number of exercises that share similarities with the movement that has been described, these include: the back squat, the front squat, the power clean, the power snatch, and the jerk to name a few. While exercises like the leg extension and the leg curl may strengthen the knee flexors and extensors, they do not involve exerting force against the ground and do not prepare the athlete to use his or her hips, knees, and ankles together.

While movements are important, there are times when you may want to address specific muscles or joints in a conditioning program. This may be to prevent injuries, to rehabilitate injuries, or to achieve a certain appearance. For example, a baseball pitcher may want to train the rotator cuff muscles, or a sprinter may want to address the hamstring muscles. You may want to target certain muscles to make them hypertrophy for appearance, for example a body builder's biceps. While movements are important for designing a conditioning program, addressing specific muscles or joints may be necessary at times. Addressing movements, muscles, or joints assists with selecting exercises. Things like workload, rest, and intensity are driven by the energy system(s) that you want to train. Energy system training is critical to improving athletic performance. Often performance is limited by your energy stores and your ability to replenish them, both of which are trainable. You can design conditioning programs to enhance the energy system(s) that are used in an athletic event. To do this, consider the following:

How long does the event last?

Is the event performed continuously? Or does the athlete get to rest?

If the event is not continuous, how much time does the athlete actually spend moving before he or she gets to rest?

Examining how long an event lasts will help you determine what energy system(s) contribute to performance. For example, a sit up test that is conducted for two minutes will rely heavily on glycolysis for energy and performance will be limited by the accumulation of lactic acid. A hundred meter sprint that lasts ten seconds will rely heavily on the available stores of ATP and will be limited by the amount on hand.
The length of the event can be deceptive, however. For example, a football game might last two hours. Just looking at the length of time might seem to indicate that the aerobic energy system needs to be trained for football players. In this case one needs to consider if the athletes are moving continuously. In the case of football the answer is no, the athletes rest between plays and have a chance to recover their energy stores. In this case one should consider how much time the athlete actually spends moving before they get to rest. The average play may only last five or six seconds, which would indicate that the sport is primarily dependant upon the levels of ATP in the muscles.

Energy system training is an important consideration because it helps to dictate how much weight to use, how many repetitions to perform, and the amount of recovery time. If you are interested in increasing the stores of ATP, then training will involve heavy weight, low repetitions, and lots of rest. Glycolytic training will involve moderate reps, moderate weight, and little rest. Aerobic training means lighter weights, many repetitions, and no rest.

A final consideration with specificity concerns the velocity of movement. The gains from exercise are specific to the velocities that the exercises are performed at. If exercises are performed at slow speeds, then we become stronger at slow speeds; however, there is little transfer to faster speeds. If exercises are performed at faster speeds, then we become stronger at faster speeds. This is important for athletics because few sports are performed at slow speeds.

If one is designing a conditioning program for a sport that is performed at high speeds, then one will need to include exercises that make athletes stronger at high speeds. These include things like the variations of the Olympic-style lifts (the clean, the snatch, and the jerk), plyometric exercises, and sprints.

The principle of specificity is important because it dictates what gains are made. The next principle is important because it ensures that you continue to make gains from your training.

The Principle of Overload

The overload principle states that in order to keep making gains from an exercise program, you must find some way to make it more difficult. This is because bodies adapt to exercise. The problem is that once your body adapts to a given workload, it will not continue to adapt unless the workload is increased somehow. If you do not continue to adapt, then eventually you will plateau and regress.

Having stated that it is necessary to make conditioning programs more difficult, one caution should be kept in mind: you must observe specificity when applying the overload principle. Performing a set of twenty might be a way of making the workout more difficult, but if you need to enhance the phosphagen energy system then you are violating specificity. There are a number of ways to apply the overload principle to a strength and conditioning program:

- increase the weight lifted;
- increase the volume of work;
- change the exercises employed;
- modify the order of the exercises; and
- alter the rest periods.

Increasing the weight that is lifted will make the workout more difficult. Heavier weights

will force your muscles, connective tissue, bone and nervous system to adapt. Lifting heavier weights will also cause you to initially perform fewer repetitions with the weight. Increasing the volume of work—either number of sets, number of repetitions, or some combination thereof—will result in your body having to adapt to it. This is one of the main ways to elicit larger muscles and connective tissue adaptation from strength training. One should be careful with this method of applying overload; a volume that is too great will train the wrong energy system.

Changing the exercises employed is a way to increase overload that many individuals are reluctant to use. Many people feel that the exercises they are performing are the only ones that can elicit certain gains. This is not so. Changing the exercises has a number of benefits, including keeping the workouts interesting and requiring your body and nervous system to adapt to resistance imposed in a totally different way.

There are many exercises that train the same movement and the same muscle groups, this means that you do not have to rely on one exercise to train a given area. For example, the back squat trains the muscles of the hip, knee, and ankle in a manner that involves exerting force against the ground, it loads the bones of the vertebral column and lower body, and is performed standing up. There are a number of exercises that do the same thing and that may be substituted for the back squat:

- Pause squats;
- Eccentric squats;
- Front squat; and
- One-legged squats.

Any of the above exercises may be used to increase lower-body strength in a way that also loads the bones of the spine and lower body and is performed standing up. The order that exercises are performed is another way to provide overload. By changing when exercises are performed, you make some exercises more difficult to perform and others easier. For example, in your current workout your exercise order may look like this: bench press, incline press, dumbbell flies. Now, let's change the order of exercises so that the new workout looks like this: dumbbell flies, incline press, bench press. The result of this change is that you will be able to lift more weight on the dumbbell flies and incline press, because they are performed while you are fresher. You will lift less weight on the bench press, because it will be performed while you are fatigued. Not only will you become stronger on the first two exercises, but you will also keep your workouts interesting and this will also help your body to adapt in a different manner because you are focusing on the first two exercises instead of the bench press.

A final way to provide overload is to modify the amount of rest. This must be used carefully to ensure that you are observing specificity. By increasing the amount of rest in between sets, you allow your body to recover more completely. This means you will be able to lift heavier weights with a greater number of repetitions. The benefit oft this approach to training is that it allows you to increase your strength on exercises. Conversely, if you shorten the amount of rest in between sets, you do not allow yourself

as much recovery. It becomes more difficult to lift a given amount of weight. While this does not do as good a job of increasing strength, it does force the muscles to grow to adapt to the rest period.

Overload is not something that only needs to be applied on a daily basis, it must be applied over a lifetime of training. The final principle deals with the importance of applying overload logically over time.

The Principle of Progressive Overload

Progressive overload involves two areas:

- The exercises that are employed in a training program; and
- The total amount of work that is done in a training program.

The exercises that are performed by an individual beginning his or her training career should be less complicated than one who has been training for a longer period of time. A beginner should be expected to master certain fundamental skills in the training program. Once those skills are mastered, they may be applied to more complicated exercises. Failure to master these skills may result in injury, wasted time in the weight room, and incomplete development. Two examples of learning fundamental skills before progressing to more complicated ones concern the back squat and the Olympic-style lifts: The back squat is typically learned before the front squat, overhead squat, or other variations. This is because the back squat teaches correct posture when squatting, foot placement, keeping the heels on the ground, squatting by pushing the hips back and then flexing the knees, ascending with the hips and shoulders moving up at the same speed, etc. If one does not posses those skills then the front squat, overhead squat, pause squat, eccentric squat, etc., will be much more difficult to learn.

Generally the Olympic-style lifts are learned from the top down. This breaks down a complicated exercise and makes it easier to master. For example, by learning the power clean initially with the bar above the knees, we learn to explosively extend the hips while shrugging the shoulders up and plantar flexing the ankles. We learn to receive the bar in a quarter squat and how to recover from that position. This is difficult to learn. Adding correct starting posture with the bar on the ground, lifting the bar from the ground to the knees, getting the bar around the knees, and then explosively extending the hips while shrugging the shoulders up and plantar flexing the ankles will prove too much for many to master initially.

In order to make gains from training over time, you must find a way to perform more work. This may be more weight lifted, more repetitions performed, more sets, or some combination of the three. As we discussed in the overload section, this is necessary to keep your body making adaptations. This also needs to be conducted with caution, as progressing too quickly can result in injury and burnout. The best way to do this is to apply some type of systematic approach to training. The one most commonly used is

periodization of training, which essentially consists of breaking the training process down into smaller, more manageable units. Periodization is a way to organize your training over your career; this includes the weight lifted, the volume of work, the exercises employed, rest, recovery methods, etc. All of this is done in a way that ensures that you are in the best possible shape when it counts—during the competition.

The principles of exercise that this article have covered are very important for making sure that you get the most out of your strength and conditioning programs. Applying specificity means designing conditioning programs to elicit the development of desired qualities. Applying overload means that strength and conditioning programs will be difficult enough to be effective. Applying progressive overload allows for strength and conditioning programs to be effective over your training career.

Training Techniques

Warm-up and Cool-down

Warm-up and cool-down periods should be a part of all training sessions. A good warm-up increases the heart rate, breathing rate, and overall body temperature, preparing the body for the upcoming training session. So, prior to beginning any exercise session, I would suggest a 5-10 minute warm-up (cycle, jog or skip rope) at 60-75 percent maximum heart rate, followed by 10 minutes of stretching. It is important to perform full-body stretches every day and to hold each stretch for 30-60 seconds. A cool-down period allows the body to recover from the stress of the training session. The cool-down period should consist of light jogging or cycling, followed by a period of stretching and flexibility exercises.

Proper Breathing

Proper breathing during the performance of resistance training is an important aspect of correct exercise technique. The normal breathing patter is to inhale just prior to and during the lower phase of the lift (negative portion) and to exhale during the lifting phase of the repetition.

Repetition Speed

A repetition should be done under control through a deliberate cadence. Swing a weight too fast and momentum takes over to bear the load instead of the intended muscles, sometimes putting your joints at risk. To find the correct cadence, count to two was you lift the weight, and count to three as you lower the weight.