

Kinesiology of Exercise eBooks Based on the Work of Dr. Michael Yessis



BONUS 3

Training Recommendations

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Part 1 – Training Recommendations

Training Recommendations

The Strength Training Program

The strength training program depends upon many different factors such as level of fitness, mastery of the exercises, sport that you are involved in, sex, age, etc. Also very important, if not the most important factor, is the training objective. In essence, the training program depends upon what is to be achieved.

This book is aimed at all levels of athlete but especially the beginner and intermediate. The following training program outlines how to start and describes how progress should be made until the athlete is capable of doing a more sport specific type program.

This means a program that is more complex and consists mainly of specialized strength and explosive exercises. These exercises duplicate the actions seen in execution of the sports skills. This type of program takes over after several years of physical and technical preparation. If this work is not done in the early youth years it will be impossible to accomplish as high a level of performance in the adult years.

Understand that all sports require a different specialized strength program mainly because of the skills involved and the specialized exercises that must be used. The program for a football player is different from a baseball player and different from a lacrosse or soccer player. It is also different for a bodybuilder, powerlifter, weightlifter or strongman.

In the beginning stages of strength training the most important objective is to learn how to do the strength exercises correctly and effectively. This is needed to develop the base physical abilities in conjunction with further development of the circulatory system, especially the capillary network. Achievement of this objective is critical to present and future development. The importance of this cannot be overemphasized! It is the crux of an athlete's success.

How Many Repetitions?

One of the most frequently asked questions is how many repetitions should be done for each exercise. This is a valid question since the number of repetitions (together with the number of sets) is the key to the type of development that will be produced.

However, it is important to understand that there are no magical numbers that will produce the changes you desire. Strength, flexibility, muscle mass, and muscular endurance development are very individualistic. For some individuals doing a certain number of repetitions will produce the greatest increase in strength, flexibility, endurance, etc. while for others there will be minor changes.

Because of this, you must pay close attention to the changes you receive from doing exercises with different numbers of repetitions in regard to your capabilities. There are, however, some excellent guidelines to direct your training based on research and practical experiences.

Following are some guidelines for the number of repetitions that should be used when the athlete is well experienced in weight training and has been in training in his sport for several years.

1-4 repetitions are for pure strength. There are no increases in muscle mass.

5-9 repetitions for strength together with muscle mass.

10-15 repetitions for muscular strength, muscular endurance, and muscle mass.

16-30 repetitions are for muscular endurance. There may also be small increases in muscular strength and/or mass.

31-50 repetitions are used for the development of muscular endurance, no mass and some cardiovascular endurance.

50-100 repetitions for muscular endurance, cardiorespiratory endurance, a possible loss of fat and mass and no strength increases.

Keep in mind that these are only guidelines and there is variation in the numbers depending upon the individual and his or her stage of training. For example, high-level athletes who require increases in strength usually train in the 5-9 RM range, but not year round. Training with the same number of repetitions and weight leads to the hitting of a plateau (or full adaptation) in regard to increases in strength or other

physical qualities. For increases in general strength, most athletes begin the yearly training cycle with higher numbers of repetitions. Beginners work in the range of 18-22RM (repetitions maximum) for many months or even one to two years. They then decrease the number of reps when they are capable of safely handling an increase in the intensity in order to receive maximum benefits.

High-level or elite athletes usually work in the 5-9 or 8-12RM range in the general preparatory period (GPP) and then change according to the demands of the specialized strength exercises in the specialized preparatory period (SPP). At this time, the amount of specialized (dynamic correspondence type exercises) and speed-strength (explosive) training increases.

It should be noted here that there are many forms of strength that may be needed depending on the requirements of the particular sport. For example, if you are a long-distance runner you would train more in the higher repetition range to develop greater muscular endurance rather than muscle strength.

On the other hand, a sprinter or athlete involved in sprinting or jumping would train for greater strength, especially eccentric and concentric with some attention to isometric. At this time technique of the sports skill is also incorporated into the strength exercise. . This is why on the elite level of performance, almost the entire strength training program consists of specialized strength exercises. General preparatory exercises are used mainly for recovery, not for development.

In most cases, you have to modify the training program to develop greater speed-strength, starting strength, and explosive strength. In many cases these qualities become even more important than absolute strength especially if plyometrics are also incorporated at this time. This is a most important recommendation at this time. In general, for power and most team players, the speed of execution of the exercises changes as well as the number of repetitions and sets throughout the yearly cycle. Thus the athlete should use the number of repetitions that correspond to the objectives

of the training and the type of strength needed. For more information on strength and various factors related to strength, read *Supertraining*. For more information on strength and power for runners and jumpers read *Explosive Running*. See DoctorYessis.com for information.

How Many Sets?

It is generally assumed that when you lift weights you should do three sets of each exercise in order to gain strength. This is a fallacy. If you are a beginner, doing one set will give you the same gains as doing two or more sets. The reason for this is that one set is more than adequate to sufficiently deplete your energy supplies to bring about supercompensation.

The higher your level of fitness and the more strength you want to gain, the greater is the number of sets. This also depends on the percent of maximum weight being used. In general, the more sets you do, the fewer the repetitions for each exercise. The more repetitions you do, the fewer the number of sets that are needed. In supercompensation your energy supply is not only restored to the original level, but additional energy supplies are deposited to allow for more work in the upcoming workouts. During supercompensation, there is restructuring of the muscles and tissues to increase their strength, endurance and/or mass.

In addition, there is usually greater capillarization to better support the muscles and tissues and other organs. These changes enable you to do the same or greater amounts of work with greater ease in the following workouts. The changes that are produced during the phase of supercompensation are the key to any development that you undergo.

As fitness and strength levels increase, it may require two sets or more to adequately deplete the energy stores in order to continue achieving supercompensation. When two sets are insufficient, it is necessary to do three sets. This applies only when the number of repetitions is no greater than 8-12 RM. However, the use of two or more sets is usually reserved for the third or fourth year of training. Doing more than one set soon after initiating the strength training program, creates excessive stress on the body. Studies have shown that lower intensity programs produce greater supercompensation which results in greater development of the body. This is why it is often best to stay with one set for longer periods of time. The one set will produce greater and better results.

Doing more than 3 to 4 or more sets does not allow the body to produce the gains that are possible when less stress (less intensity) is employed. This is a fact that is typically been overlooked in the development and practice of effective strength training programs.

A more advanced athlete may use a low range of 3-5 RM. In such cases, five or six sets can be done. If a 1-3 RM routine is used, then it is possible to do up to 6-8 sets. However, when the number of sets gets this high, fatigue usually sets in and there is a breakdown in technique.

Because of this, some athletes can be found using 10-15 sets, but this is seen only when practicing a particular lift for competition. In this case, each set consists of 1-2 repetitions and they are executed over the course of a day, not in one workout. Such high-intensity workouts are recommended only for the highest level athletes. It must also be pointed out that all novice athletes should do a greater number of exercises rather than more sets and a limited number of exercises. There are multiple and sometimes complex reasons for this. They are discussed in the next section. Suffice it to say, a greater number of exercises are needed in order to fully develop the body. This is especially needed for the high school athlete and for athletes who have not previously trained. The greater number of exercises is necessary to develop the base needed in order to do more intense or specialized strength exercises. Note also that it takes approximately 20 or more exercises to cover all the major joints and joint actions of the body. When the athlete (usually high school level) completes all the exercises for a total body workout, there should be a high level of fatigue. In such cases doing more than one set will lead to overtraining. Thus, you should use additional sets wisely. This should mean only when additional sets help to ensure continuous development of strength and other qualities. Always adjust the number of sets to the number of repetitions and number of exercises that are used in one workout.

In general, there is no magical number of sets that will produce the greatest development. The exact number always depends on your level of fitness, mastery of the exercises, training objectives, and stages of training. For most athletes however, less intensity is most important for continuous development of the body and sports abilities.

Designing the Exercise Program

The key to achieving the results desired depends on how the exercises are executed, how many exercises are included and how many sets and repetitions are done. Understand that it takes time to develop the physical qualities that are needed to do an exercise correctly and effectively. In many cases this means doing prerequisite exercises before you can do the main exercise in a safe and effective manner. For example, doing the good morning and back raise exercises before undertaking the squat is usually needed for most beginning athletes. In some cases this can take up to two or more months!

This is not a long period of time to effectively learn exercise technique. When the Soviets dominated the world in weightlifting they had beginners practice the snatch with only a wooden pole for up to a year before they began to use a barbell. Even the Japanese soccer team that beat us in the Beijing Olympics did not begin playing until they are mastered the basics after one or two years.

For the exercise program to be most effective, it must be individualized according to the athletes' physical capabilities. If you have never done any resistance exercises in an organized manner, then you should consider yourself a true beginner and follow a progression different from the one you will be using later.

However, if you are an experienced exerciser and are competent in basic strength training exercises, a different beginning progression should be followed to achieve the best results. Usually at this time the exercises are already well mastered and fitness levels are high.

Keep in mind that as your level of fitness and mastery of the exercises improves, you must move up to the next level commensurate with your abilities. In essence, there should always be some changes in your training program except when seeking full adaptation in regard to mastery of technique or some physical quality. In this way it is possible to experience continuous progress, achieving maximum supercompensation or full adaptation.

Until you get to this point, which can take months or years, it is necessary to remain with the same exercises and exercise execution until full mastery (adaptation) of the exercises is achieved. This includes the technical and physical aspects of the exercise.

It does not, however, mean that you do exactly the same thing in every workout. You must always be increasing the resistance to stay within the specified range and make changes in how the exercises are executed. Exercises are modified to vary their exercise but to still develop the same muscles. In this way you can more fully develop all the muscles involved, the key to the best all-round preparation of the body.

Getting Started

Level 1

The starting stage of a weight training program for beginners is devoted to learning and familiarization of the exercises. It is used to gradually accustom the body to exercise without soreness or discomfort. Note that if you experience soreness, it is a sign of damage to your muscles and tissues. It is not indicative of a good workout.

Getting started on an exercise program is not when you should be targeting only one or two physical qualities or to be concerned with achieving maximum levels of strength, muscular endurance, muscle mass or other quality. It is a time for learning and getting familiar with the exercises.

To begin, read exactly how to do the exercise (having this book with you when you work out is a step in the right direction). This is very important! When you have a good idea of what to do, then you should do one exercise for 4-6 repetitions with a light weight. As you do the exercise, concentrate on exactly how you are doing it and how it feels. In this manner you start to recognize what each exercise feels like and which muscles are working.

After completing the repetitions, relax and get ready for the next exercise. Read the description and then do several repetitions. Proceed in this manner until you do all the exercises selected. The number of exercises executed on the first day should be about 6-12 but can vary greatly depending on your level of fitness and mastery of the exercises.

Use at least one exercise for each major muscle group and use either machine or free weights. For athletes, free weights are preferred as they also develop balance and stability. Select the exercises with the least degree of difficulty.

The next day should be a day for recuperation even though you may feel it is not necessary in the first couple of weeks. It will be necessary in a few weeks so you want to establish a good workout routine from the very beginning. The day off is necessary to see if you experience any soreness from the exercises that you did.

If you do experience soreness it means you did too much, either in the number of exercises or the number of repetitions done. When you work out in the most productive manner you should not experience any major soreness or discomfort.

On the next workout day, if you did not experience any negative effects, increase the number of repetitions by 2-3 for the exercises done previously and introduce 2-4 new exercises. Understand that in the beginning stages it is necessary to develop all of the major muscles and most of the minor muscles. Because of this, you need approximately 20 or more different exercises to hit all of the targeted muscles. Under no circumstances should you limit yourself to only a few compound or multi-joint exercises. If you do this you will not get the base development needed to ensure safe and effective progress. And it may set you up for injuries when you play or when you increase the intensity in particular exercises.

For example, an effective all-round beginning strength training or developmental program can consist of the following exercises:

1. heel (calf) raises
2. leg (knee) extensions
3. squat (one half – full squat) or leg press
4. hip flexion
5. hip abduction
6. hip adduction
7. hip extension
8. back raises
9. 45° sit-up
10. reverse trunk twist
11. reverse sit-up
12. bench press
13. bent over row, two variants
14. overhead press
15. full and partial range front arm raises
16. full and partial range lateral arm raises
17. lat pull-down

18. biceps curl
19. triceps push down
20. supination-pronation
21. wrist curls
22. reverse wrist curls
23. finger and grip exercises.

Learning to do each exercise fairly well usually takes more than a week. To get full mastery of the exercises requires weeks or months of doing the exercise. As you make progress, it is important that you have a diary to record each exercise that you do and the number of repetitions and resistance used. In this way you can quickly see exactly where you are with each exercise.

As you develop confidence in doing the exercises, you should keep adding one or two repetitions and/or exercises in each workout until you reach about 20RM (repetitions maximal) for all of the exercises. Keep in mind that this is only a range guideline. You can be slightly below or above this limit but only for two or three workouts.

A greater number of repetitions in the early stages of training are more beneficial and productive than doing only a few repetitions and more sets. Equally important is doing more exercises rather than fewer. Reasons for this are as follows:

1. You get greater strengthening of the joints by getting stronger ligaments and tendons. The amount of strength developed is much greater than you can get when you do only a few repetitions with greater resistance.
2. The 1 x 20 RM routine results in greater muscular endurance in comparison to the amount achieved from doing a higher intensity program. Both strength and muscular endurance are needed for novices and to a great extent, intermediate level athletes, in the early stages of training.
3. The 1 x 20 RM routine results in greater development of the blood vessels especially the capillaries, in comparison to the conventional three sets or more of higher intensity type programs. The newly developed capillary beds are necessary for recovery of the muscle after a workout and for bringing in new supplies for future workouts.

4. The 1 x 20 RM routine results in greater overall strength of the muscles in comparison to the conventional higher intensity programs. Keep in mind that this applies to the novice and intermediate level athlete, not to the high or elite level athlete.

These outcomes may appear contradictory to what has typically been accepted in mainstream thinking. This is because most people simply assumed that this was the way to train because it was what had been done for years. But there is considerable research, especially studies done by the former Soviets, that prove it is not the most effective way to train novices and intermediates. These findings have been substantiated by practice.

On Level 1, workouts become more strenuous every time you increase the weight. This should happen every time you surpass twenty repetitions for 2 to 3 consecutive workouts. Understand that some exercises for 18-22 repetitions are achieved fairly rapidly, while in other exercises, progress may be much slower. This is perfectly normal and it does not mean that the exercises are not being done correctly or that there is some other problem. Some muscles take longer to respond and some exercises are easier to learn than others. For most individuals it takes a minimum of 6-8 weeks to reach this level.

If you have not reached 20RM on a particular exercise, you should remain on Level 1 with the same exercise until this level is reached. Even more importantly at this time is that when you continue to receive gains from the 1 x 20 RM program, you should stay with the 1 x 20 RM routine and not make any changes in the basic program. Make the change to the next level only when your gains have slowed down appreciably or have stopped. Experiences show that it usually takes at least one to two years before there is a slowdown in strength gains or that strength gains cease to occur. This applies mainly to youngsters and novice athletes.

It is important to understand that each person is a unique individual. Everyone responds to exercises differently from other individuals. This is why you should never copy what someone else is doing. They may have responded quickly to the exercise, but it does not mean that your body will also respond in the same manner. This is especially true in the teenage and to a good extent in the adult years. Also, copying someone else's program, regardless of how successful it is, creates the possibility of getting injured. Most effective is to establish your own program. In order to achieve significant strength gains, you should work out a minimum of three days a week. The workouts, however, should not last more than about 60 minutes. Also, it is important that the workouts be done on a regular basis with no days skipped. Weight training more than three days per week does not bring additional benefits.

Rather than getting additional gains in strength from doing more than three strength workouts per week you expose yourself to overtraining and the possibility of injury and great soreness. Keep in mind that any time you are experiencing soreness you cannot have a quality workout. This is why a day of rest in between the workout sessions is needed. It gives your muscles ample time to fully recover before the next exercise session. Using different restorative measures is also of benefit. For many individuals this workout routine is continued for at least 4 to 5 months. With lower level athletes it is usually even longer and often lasts for one to two years. Many trainers are finding that their athletes continue to improve on this routine for well over one year. The key here is not only how much they keep increasing strength and other physical qualities, but also how well they are improving their performance on the field. This is the major objective of all training.

There should be improvement in both the technical and physical areas in order to stay on the same program. In general, the two are inseparable. An increase in the young athlete's physical abilities shows up in improved performance on the field. Keep in mind, however, that this is not what happens with high-level athletes! On Level 1 when more than 20RM in a specific exercise is reached regularly, increase the resistance. Doing this decreases the number of repetitions to about 12-15. Then work to get back up to 18-22 RM and repeat the process. In the early repetitions of a set you are developing mainly muscular endurance, together with increased blood flow. This is the key to recovery and effective workouts.

However, as you reach the last 5-6 repetitions in the set, the stress on the muscles becomes the same as though you were using heavy weights for only a few repetitions. Thus, you gain mostly strength. This is why this program produces both strength and endurance, the two key factors needed by all athletes in the beginning stages.

But, to receive these gains you should experience some "straining" as you complete the last few repetitions. It should not be severe and should be within your capabilities. But, and this is most important, each repetition, regardless of how difficult it is to complete the repetition, must be done with good technique, i.e., with correct and effective form.

Placing such stress on the body is needed for adaptation to occur, i.e., for true physiological changes to occur. This means that there is some restructuring of the muscles and tissues that allows you to do more and to experience positive body changes.

Thus, if you are doing about 20 maximum reps, it means you are not capable of doing 22, or 23 without undue stress or without good form. If you reach this limit or go beyond it for 2-3 workouts in a row, it means that you can now handle additional resistance, but only if your technique remains the same. This is extremely important since technique must be correct on every repetition.

Also, since the amount of resistance that is used is in the 60 to 80% range it does not place excessive stress on the muscles and joints. In addition, it allows for more effective execution of the exercises. Using maximal weights typically interferes with technique execution and often leads to injury. More importantly, it does not allow you to do 20RM.

If you do not work to your maximum potential on this level, you will not be receiving the benefits of the exercise or the workout program. Keep in mind that you have had months of relatively easy-to-hard exercise to get you used to handling increasingly greater overload. At the same time there should have been full concentration on mastering proper and safe technique.

The increases in resistance should not change technique of exercise execution. If they do, you must decrease the resistance until you are capable of maintaining correct execution. Technique is more important at this time than how much weight is handled. This is where many beginners make a fatal mistake; they keep adding more weight to the exercise which changes technique and as a result, creates bad habits and most importantly, less positive development.

Be in tune with your body as you do the exercises. Only in this way can you find out what is working for you and to determine which exercises appear to be most effective. You can then make the necessary changes in the exercises or exercise program to produce the results that you desire.

Level 2

After working in the 18-22 MR range on level 1, the athlete should have developed sufficient confidence in exercise execution and in his physical abilities. In addition, the coach or trainer should be able to evaluate the athlete's exercise technique to make sure it has been well mastered.

This will also indicate if the individual has gained sufficient strength and the other physical qualities needed for safe and effective execution of the exercises. In these

cases, which usually occur in the second or third year, the athlete or trainee should now be ready to modify the program to make it more specific to his or her objectives. Understand that even a beginning strength training program should have some specialized strength exercises included that duplicate what the athlete must do in his game skill execution. Or, the program should include some exercises more specific to body development or particular needs of the individual.

Keep in mind that for athletes, physical qualities other than strength should also be worked on at this time. This includes qualities such as speed, power, agility and quickness. Bodybuilders typically do not have many other concerns although other factors still come into play such as diet, recovery and specific targeting of certain muscle groups.

On Level 2 the individual still continues to develop the base or foundation needed for his sport or activity. At this time the athlete begins to do 2 sets of some of the exercises. The increased number of sets coupled with fewer repetitions, are needed to gain greater strength. Depending upon the sport, they may do up to three sets. If greater muscular endurance is needed as for example, for a long-distance runner, then the number of repetitions should likewise increase. If more explosive power is needed they may do three sets in which one is devoted to explosiveness, a second to strength and a third to endurance. When a combination of qualities is needed, this basic routine is continued.

Safely overcoming greater resistance for fewer repetitions sometimes requires warm-up or preparation of the muscles. Thus, for the first set, do 10-12 repetitions with half the weight that you will be using in set 2. In set 2, you do 8-10RM for strength. Follow this with set 3 in which you do 15-20 RM repetitions for endurance. In this routine you gain strength and muscular endurance, the two qualities that are still needed for greater development of the body. Especially important at this time is the circulatory system and capillary network. They are the key to recovery and supplying the body with energy to continue working out or playing.

After you do one set, rest for approximately 30-60 seconds for recovery. Then repeat the same exercise for the second set. If desired, you can do another exercise for different muscles in between sets. In this way you do not have to wait for a particular muscle to recover and, as a result, do more exercises in a shorter amount of time. Doing 3 sets, a set for warm-up, a set for strength, and a set for endurance, should be sufficient for most athletes and fitness trainees. However, some individuals 4 sets of a

selected exercise may be needed to either to gain greater strength or explosive power. The key here is that the exercise in each set is executed with excellent technique. If technique begins to deteriorate, it is necessary to stop doing the exercise. There is no need for very heavy weights or resistance in this program. If you begin using excessively heavy resistance, your range of motion will begin to decrease and it can negatively affect your technique. Thus, be sure that you do the exercise as described regardless of how many sets are executed.

The amount of weight used on level 2 should be in the 60 to 85% of maximum zone on most of the exercises. There is no need for exercises in the 90-100% of maximum zone. Working in this upper zone can be detrimental as it can lead to negative changes in technique and the possibility of injury. Even more importantly, you will not be able to gain as much strength or muscular endurance over the next six to eight weeks as you can in the 60 to 85% zone.

Keep in mind that in the early years of training the main objective is to learn and solidify exercise and sports skill technique. This point cannot be over emphasized! In addition, establishment of a good foundation of strength, muscular endurance, and an expanded circulatory system network is needed to do more intense and voluminous work in the sport or activity selected.

As you become accomplished in the exercises and exercise routines you should see substantial gains in your body development and game play. Once athletes have achieved an optimal level or when they are preparing for competition, they should not continually increase the resistance or the number of repetitions or sets.

When you reach a level that enables you to play the game on the needed level, then all you have to do is maintain your strength levels. This typically should occur when the season is about to begin. At this time game tactics and strategy as well as perfecting game skills is of paramount importance.

This typically does not apply to bodybuilders and fitness devotees. They usually continue to increase strength for more body definition as well as for increasing muscle mass. However, they too need a break from the strength training to allow the body to fully recover and to mentally relax. Thus they should remain active without strength training during this time.

Most sports are not strength contests. Sports skills (technique, neuromuscular coordination, strategy and tactics) are critical for success in the sport. If you attain

additional levels of strength immediately prior to or during the season, you will see changes in technique which can have a negative effect. Thus, as you do the workouts, you should be attentive to your technique and skill coordination so that there will be a smooth blending between the physical and technical qualities.

Level 2 can be considered a lead-in to significantly more specialized training regardless of your sport or activity. However, during the last few months of being on Level 1 and Level 2, you should be introducing more sport specific exercises and concentrating more on the type of development that you need. This is especially important after being on Level 2.

Since the requirements in every sport are different, it is difficult, if not impossible, to present guidelines for what must be done in any one individualized program. The objectives are somewhat clearer for bodybuilders and fitness people. Any additions and changes that they incorporate will be specific to their fitness or bodybuilding goals. For athletes, the training must be differentiated according to the sport.

For example, if you are a running athlete you would probably increase the number of exercises devoted to specific strength training of the hip flexor and extensor muscles as well as the ankle extensor muscles. These are the key muscles involved in producing force (or endurance) needed for running speed. If you are a bodybuilder, you begin to do exercises more specific to the body areas that are lacking in muscle mass or definition. For example, if you do not have full development of the chest, you may need additional development of the lower or upper pectoralis major muscle. For full development it is necessary to analyze exactly the body areas or specific muscle groups that are lacking and Then select specific exercises to target those muscles or muscle groups.

At this time athletes should read some sport specific books that contain sport specific specialized strength exercises. Some books are also excellent for training the different qualities that are needed. For starters, it is recommended that you see some of the sports specific training books on the DoctorYessis.com website. This includes books such as *Explosive Running*, *Explosive Basketball Training*, *Explosive Golf*, *Build a Better Athlete*, *Explosive Tennis*, *Block Periodization and Transfer of Training*.

Part 2 – Training Principles

Training Principles

How you work out is critical to your development. Thus to get the best results possible, you should adhere to the following principles of exercise:

Individualization

You are a unique individual. Aside from obvious structural differences there are also physiological differences in the muscular, circulatory, and nervous systems that require differences in your program. This is why you or your performance coach or trainer, must be the one to make the final decision as to exactly which and how many exercises are needed, and how many sets and reps should be done. Your training program should be for you and only you.

Even though you cannot change your genetic makeup, that only determines one third of your potential, you can greatly modify your strength, mass, flexibility, and other qualities. I have worked with many athletes who have literally transformed their bodies and their playing or performing abilities. Some started off fairly lackadaisical but ended up being the most active exercisers I have ever seen. Individuality is perhaps the most important principle that guides your training.

Gradualness

Regardless of your exercise program or level of performance, any increases in speed, flexibility, strength, resistance, repetitions, or sets should be very gradual. For example, if you are accustomed to doing twenty reps for two sets, you should not in one day change to fifty or sixty repetitions or do four sets. Your body is not ready for such abrupt changes and injuries may occur. To prevent injury and maximize your results, all gains should be gradual.

Progressiveness

In order to continually show increases in speed, muscular strength, and endurance, you must progressively but gradually increase the amount of resistance, the number of exercises, or the total number of repetitions used. If you continue working at the same level with the same number of exercises, sets, and reps, you will only maintain your achieved fitness level.

Overload

Overload means you do more than your body is accustomed to. In order to develop greater strength you must use additional resistance. To increase flexibility you must increase your range of motion. Other ways to achieve overload include increasing the rate of work, i.e., doing the exercises at a slightly faster rate of speed or in an explosive manner.

These latter methods, however, apply more to power athletes and should be used only after you have achieved base levels of strength and endurance. Some of the different methods to be included are plyometrics, explosive, and other types of speedstrength exercises.

Awareness

The principle of awareness is very important. To be aware, you should keep a record of your workouts. Record the resistance, sets, and repetitions for each exercise, and how you feel. Make notations of what you experience, both mentally and physically. This is especially important for women who respond differently in each phase of the menstrual cycle. Some women do their best work before or after menstruation, while others perform better at the actual time of menstruation. Women should determine when they can do their most productive work and schedule the workouts around the menstrual cycle. In general, stay away from very strenuous activity (such as using heavy resistance) during the menstrual period.

Awareness also means being cognizant of what is happening to your body. You should learn what each exercise feels like and how your body responds to it. In time you develop the muscle memory needed so that when you execute the exercise, you can tell immediately if it is working for you or if something is amiss. When things do not feel right, you should check to see if your execution is correct or if there is some other problem.

Consistency

Without consistency in your exercise program, all the work you do may come to naught. For example, after each workout your energy supply is used up. It is replaced while you are resting and sleeping, and when additional energy supplies for later use are deposited. This is known as supercompensation.

If you do not exercise sufficiently to use the extra energy that has been deposited, the body will re-absorb it and you may be left with the same energy as before. I am sure you have noticed that when you have not exercised for a while or have become sedentary, you actually become more tired than when you were active throughout the entire day.

Consistency, which means doing the exercises on a regular basis, is the key to success in any exercise or training program. What I recommend, therefore, is that you block off the time needed in your busy schedule so that the exercise program becomes as important as your other activities.

If for some reason you are unable to work out for a week or two, start your exercises on your return using less resistance. In one or two days you should get back into the groove of doing the exercises and seeing the results. Do not be overly concerned when situations arise that interfere with your program, but do not allow this to happen on a regular basis.

If you want to improve your technical and physical abilities most effectively and in the shortest amount of time, schedule the exercises you should do. Once you set up a regular exercise program you will see the benefits quite soon. And you will become hooked. You will look forward to doing the exercises.

The reason for this is quite simple. You will see what the exercises are doing for you and how they are improving your performance. You will also experience greater confidence in yourself, which will show up in better training, better playing and execution of the sports skills and in everyday life.

Periodization

You now have the information needed to construct your individualized training program. To assist you in how the workouts should be distributed throughout the year, it is important to understand the concepts of periodization and cycling. For example, when you establish a periodization scheme, the year is divided into different periods or training phases.

In each phase you train in a specific manner to gain certain physical qualities or attain certain results. The development you achieve enables you to do the training called for in the next period. The positive changes you experience from each training period make it possible for you to tackle the next phase, which eventually leads to your ultimate goal.

Because the goals of different athletes vary, so must the training periods and the types of training done in each period. Athletes usually have four objectives:

1. Increase muscular strength and endurance,
2. Increase speed-strength capabilities to get more speed,
3. Increase cardiovascular fitness for improving performance in the endurance events and for recovery,
4. Increase technical (technique) proficiency.

Thus training is divided among, strength, endurance, and speed with skill and technique being perfected by itself and in all of the training. These objectives are accomplished while maintaining - and in some cases increasing or decreasing - flexibility. Training is integrated in a manner that ensures results in the allocated amount of time.

For bodybuilders, fitness buffs and athletes involved in the iron sports there are usually two or three major objectives:

1. Increased levels of strength and/or muscle mass,
2. Increased or improved cardiovascular abilities,
3. Improved muscle definition and greater symmetrical development of the body.

Each individual involved in the different activities may also have other objectives. In most sports there are usually two major competitive seasons, depending on whether

you are a competitive or recreational-competitive athlete. Some may have five or six competitions culminating in one major competition. Most scholastic, collegiate and professional sports have one season but there may have two, as for example, the indoor and outdoor season in track and field. There may also be minor competitions throughout the year.

Because of this there should be one or two major competitive periodization plans, which should be basically the same. Keep in mind that all periodization plans follow the same pattern regardless of how long each phase or plan lasts. Also, since the objectives in each competitive cycle are basically the same, the periodization plan will have to meet the same objectives and have the necessary means and methods employed.

The Periodization Plan

The periodization plan has four periods that can last three or more months. The four phases are general conditioning, specialized training, competition, and the post competitive period. For some sports, as for example professional tennis, bodybuilding and powerlifting it is difficult to pinpoint one major competitive season since there are many competitions throughout the year prior to getting to the final championships. Because some of these, athletes try to compete as much as possible, it is extremely difficult to set up a true periodization plan. For these individuals it may be best to establish a block training program. Suffice to say that competing throughout the year is not a very effective way to train or improve performance.

The more you compete and avoid other types of training, the greater your chances for injury. Aside from the iron sports, participating in more competitions does not improve your physical abilities. You must train separately to improve strength, speed, and explosiveness, and then incorporate them into your sport. Just competing is a very poor way to improve performance.

Exactly how you break down your periodization plan depends on how often you compete and where and when you wish to do your best. Remember this is why you undergo a periodization plan - to do your best at a particular time in a specific event. It is the best way you can achieve better performances, better than you have had in the past.

Phase 1. General Physical Preparation

General physical preparation (GPP) makes up the bulk of the initial stage of training. It consists of general preparatory or conditioning and developmental exercises to

strengthen all the major muscles and joints in order to prepare you for the more intense training to follow. This period is also used to rehabilitate injured muscles and joints, and to strengthen or bring lagging muscles up to the necessary levels. The work in this period is very general in nature to avoid building up psychological stress. You accustom your body to working out with different exercises and activities, and the volume of work done is very high. However, the intensity of the work is low. In essence, you use this period to prepare your body for future training. Aerobic and general strength training, and technique are most important at this time.

The exact length of time spent in this phase depends on your mastery of the exercises and technique, your fitness level, sex, age, and so on. The younger or more inexperienced you are, the more time you should spend in this phase of training in order to increase strength and other physical qualities. For beginners this phase usually lasts for many months up to one to two years.

If you are a high-level athlete or performer you may spend two to four weeks in this period as a lead in to more intense training. This is based on the assumption that you remain in good physical condition and that you have maintained your technical and physical abilities throughout the year.

On this level you do not lose your skill technique or other qualities from the previous year. As a result you are able to improve and do better than you did the previous year. This is a very important point that must be emphasized. You should be able to perform more effectively every year!

The general all-around strength program should include many varied strength exercises. For most novice athletes, fitness buffs and iron sport athletes this means doing exercises for all the major joints and muscles of the body. For more advanced performers the number of exercises is limited and usually relate to the major muscles involved in the particular sport. They are done mainly for enhancing performance and injury prevention.

Phase 2. Specialized Physical Preparation (SPP)

The specialized physical preparation period begins gradually as the general preparatory period comes to an end. In this way there is a smooth transition from general to specific training. In specialized physical training, the work becomes very specific to the sport.

This means practicing specific joint actions and using exercises for increasing strength and speed-strength exactly as needed in execution of a sports skill. It is here that specialized (dynamic correspondence exercises) strength and explosive exercises comprise the bulk of the training program. For the iron sports and fitness athletes it could be greater strength, muscle mass, muscle definition etc.

The specialized strength exercises develop strength in the same range of motion, use the same type of muscular contraction as in execution of the sports skill and most importantly, develop strength in the same neuromuscular pattern as used in execution of the competitive skill. These criteria must be fulfilled in order for the exercise to be truly specialized.

In other words, you develop strength in exactly the same manner as how it is used in execution of the sports skill or exercise. Strength is developed in the same range of motion as it is displayed in the skill, has the same type of muscular contraction and is developed with the same neuromuscular technique as is used in execution of the sports or exercise skill technique.

As should be obvious, these exercises are the key to greatly improving your activity, sport or game performance. Simultaneously developing technique with strength leads to immediate improvement in skill execution that is needed not only on the field or in competition, but in all sports or exercise activities. As a result, the exercises are a must for anyone who desires to be the best and to fully develop his or her potential. By enhancing your performance abilities, you see results very quickly.

Phase 3. Competitive Period

In the ideal situation, during the sports competitive period your training should be devoted to maintaining the physical qualities you've already developed and perfecting your technique. You should not be increasing strength at this time because doing so will affect your technique.

In sports, the main focus in the competitive period should be on perfecting technique, increasing speed, and developing the psychological, strategic and tactical aspects of game competition. These aspects should be worked on together during the competitive period, with actual execution of the competitive game. Keep in mind that your physical abilities should have been developed to their optimal levels during the specialized training period.

Because the actual training workouts at this time depend to a great extent on your objectives that should be solidified together with your coach, no details are presented here. Suffice it to say that your game strategies should be developed in practice. The same guidelines apply to the iron sports and fitness activities. The objectives will vary according to the different goals and how you plan to achieve them. This is especially true in relation to how many years you have been training and your level of proficiency in the sport. The same rationale also applies to the strategy or tactics that you will use to prepare for athletic competition or in the iron sports and in fitness competitions.

Phase 4. Post-Competitive Period

After competition you should go through a stage of recuperation and relaxation, especially from a mental standpoint. At this time your body can still do physical work but your mind must rest. Active rest is best. This means you remain active for relaxation purposes, not for physical development.

At this time it is beneficial to participate in a different active sport that you enjoy so you can experience physical work but also get pleasure and satisfaction from a different activity. To get most benefit from this participation you must have well developed skills.

The post-competitive period usually lasts one to four weeks, depending on the length of your competitive season and how long it takes you to wind down. One week is considered the minimum that all athletes must take after the competitive period. If you are relatively weak, did not experience much playing time and need greater strength, you can immediately go into a strength-training program to improve your capabilities. The more time you spend developing strength, the more strength you will be able to convert to speed and explosiveness (or endurance) to get ready to compete and be on a par with higher-level athletes.

By using the schematic presented here it is possible to achieve the highest levels of physical and sports performance. Each training period builds on the previous period and allows for the best performance during the competitive period. Equally important to ensure that you get the most out of each training period, is the periodization of your nutrition. It is critical to eat and supplement with whole food products according to the training you are doing.

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