

PHILOSOPHY, SCIENCE AND PRACTICE OF
MAXALDING 3 - MUSCLE CONTROL
TECHNIQUES

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1. Voluntary muscle contraction

The muscles are used to produce movement by the animals.

The energy to generate movement comes from complex chemical processes in which ATP has a very important role.

In vertebrate animals there are three kinds of muscles:

1. **Heart muscle or cardiac muscle.** Makes up the wall of the heart. It contracts almost involuntarily at a rate of approximately 70 beats per min.
2. **Smooth muscle.** Is present in the walls of the internal (hollow) organs of the body, except the heart. This muscles are generally not under control, but you can achieve a certain degree of control over them.
3. **Skeletal or striated muscle.** Is the muscle attached to the bones. It is (must be)

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generally under control.

We shall study in first place the skeletal muscle, because it is naturally prepared to voluntary control (the contents of this section are based in those of the following web page: <http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/>).

A single striated muscle is attached at

- Origin, that is a large portion of bone.
- Insertion. It is the other end of the muscle. The junction is formed by a white tendon, attached to another bone.

There are two basic types of muscles, *extensors* and *flexors*. The reason for this is that a muscle only exerts force when it is contracted and it is necessary a pair of muscles for each joint, one that extends it and another one that bends it.

This classification is fundamental for muscle control (MC), because in the application of MC to dynamic exercises (with motion) the relaxation of antagonistic muscles with respect to those which produce the movement is extremely important.

The striated muscle is composed of thousands of cylindrical muscle fibers. The fibers are bound together by connective tissue through which run blood vessels and nerves.

The muscle fiber are formed by the following microscopic structures.

- Myofibrils, packed in an array of the same length than the fiber.
- Mitochondria, they are the energetic factories of the muscle cells.
- Endoplasmic reticulum, which is very extensive in this type of cells.

- Many nuclei. It is a characteristic property of muscle cells. This is due to the fact that each muscle fiber is formed from the fusion of many muscle cells, called myoblasts.

The number of muscle fibers is probably fixed by our genetics. Because of this the increases in strength and mass comes from the increases in the thickness of the muscle fibers and an enlargement of the connective tissue.

Each muscle fiber can be divided in a number of parts for its study.

1. *Sarcolemma*. Plasma membrane.
2. *Sarcoplasmatic reticulum*. Endoplasmatic reticulum.
3. *Sarcosome*. Mitochondrion.
4. *Sarcoplasm*. Cytoplasm.

The nuclei and mitochondria are located just beneath the plasma membrane, but the endoplasmic reticulum extends between the myofibrils.

The striated appearance of the muscle fiber is created by a pattern of alternating dark A bands and

- Light I bands.
- The A bands are bisected by the H zone.
- The I bands are bisected by the Z line.

Each myofibril is made up of arrays of parallel filaments.

- The thick filaments have a diameter of about 15 nm (1 nm = 10^{-9} m). They are composed of the protein myosin.
- The thin filaments have a diameter of about 5 nm. They are

composed mainly of the protein actin along with smaller amounts of two other proteins:

- troponin and
- tropomyosin.

The microscopic view of muscle fibers reveals a structure formed by two vertical lines (called Z lines) and alternating dark (A band) and light (I band) zones.

- The thick filaments produce the dark A band.
- The thin filaments extend in each direction from the Z line. Where they do not overlap the thick filaments, they create the light I band.
- The H zone is that portion of the A band where the thick and thin filaments do not overlap.

The sarcomer is the entire array of thick and thin filaments between the Z lines. When the sarcomeres shorten in a myofibril, they produce the shortening of the myofibril and, in turn, of the muscle fiber of which it is a part.

The contraction of skeletal muscle is directed by the nervous system.

In this respect, skeletal muscle differs from smooth and cardiac muscle. Both cardiac and smooth muscle can contract without being directly stimulated by the nervous system. They have their own control mechanisms.

The junction between the terminal of a motor neuron and a muscle fiber is called the neuromuscular junction. It is simply one kind of synapse. The neuromuscular junction is also called the myoneural junction.

The terminals of motor axons contain

thousands of vesicles filled with acetylcholine (ACh).

If an action potential reaches the axon terminal, hundreds of these vesicles discharge their ACh onto a specialized area of postsynaptic membrane on the fiber. This area contains a cluster of transmembrane channels that are opened by ACh and let sodium ions (Na^+) diffuse in.

The interior of a resting muscle fiber has a resting potential of about -95 mV. The influx of sodium ions reduces the charge, creating an end plate potential. If the end plate potential reaches the threshold voltage (approximately -50 mV), sodium ions flow in with a rush and an action potential is created in the fiber. The action potential sweeps down the length of the fiber just as it does in an axon.

During some period of time, no visible change occurs in the muscle fiber during (and immediately following) the action potential. This period, called the latent period, lasts from 3–10 msec.

Before the latent period is over,

- the enzyme acetylcholinesterase breaks down the ACh in the neuromuscular junction (at a speed of 25,000 molecules per second), the sodium channels close, and the field is cleared for the arrival of another nerve impulse.
- the resting potential of the fiber is restored by an outflow of potassium ions.

The brief (1–2 msec) period needed to restore the resting potential is called the refractory period.

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The process of contracting takes some 50 msec; relaxation of the fiber takes another 50–100 msec. Because the refractory period is so much shorter than the time needed for contraction and relaxation, the fiber can be maintained in the contracted state so long as it is stimulated frequently enough (e.g., 50 stimuli per second). Such sustained contraction is called tetanus.

As we normally use our muscles, the individual fibers go into tetanus for brief periods rather than simply undergoing single twitches.

Each molecule of myosin in the thick filaments contains a globular subunit called the myosin head. The myosin heads have binding sites for the actin molecules in the thin filaments and ATP.

Activation of the muscle fiber causes the myosin heads to bind to actin. A change occurs which draws the thin filament a short distance (~10 nm) past the thick filament. Then the linkages break (for which ATP is needed) and reform farther along the thin filament to repeat the process. As a result, the filaments are pulled past each other in a ratchetlike action. There is no shortening, thickening, or folding of the individual filaments.

Electron microscopy supports this model.

As a muscle contracts,

- the Z lines come closer together
- the width of the I bands decreases
- the width of the H zones decreases, but
- there is no change in the width of the A band.

Conversely, as a muscle is stretched,

- the width of the I bands and H zones increases,
- but there is still no change in the width of the A band.

Calcium ions (Ca^{2+}) link action potentials in a muscle fiber to contraction.

- In resting muscle fibers, Ca^{2+} is stored in the endoplasmic (sarcoplasmic) reticulum.
- Spaced along the plasma membrane (sarcolemma) of the muscle fiber are inpocketings of the membrane that form tubules of the "T system". These tubules plunge repeatedly into the interior of the fiber.
- The tubules of the T system terminate near the calcium-filled sacs of the sarcoplasmic reticulum.
- Each action potential created at the neuromuscular junction sweeps quickly along the sarcolemma and is carried into the T system.
- The arrival of the action potential at the ends of the T system triggers the release of Ca^{2+} .
- The Ca^{2+} diffuses among the thick and thin filaments where it
- binds to troponin on the thin filaments.
- This turns on the interaction between actin and myosin and the sarcomere contracts.
- Because of the speed of the action potential (milliseconds), the action potential arrives virtually simultaneously at the ends of all the tubules of the T system, ensuring that all

sarcomeres contract in unison.

- When the process is over, the calcium is pumped back into the sarcoplasmic reticulum using a Ca^{2+} ATPase.

If a stimulated muscle is held so that it cannot shorten, it simply exerts tension. This is called an *isometric* ("same length") contraction. If the muscle is allowed to shorten, the contraction is called *isotonic* ("same tension").

All motor neurons leading to skeletal muscles have branching axons, each of which terminates in a neuromuscular junction with a single muscle fiber. Nerve impulses passing down a single motor neuron will thus trigger contraction in all the muscle fibers at which the branches of that neuron terminate. This minimum unit of contraction is called the motor unit.

The size of the motor unit is small in muscles over which we have precise control. Examples:

- A single motor neuron triggers fewer than 10 fibers in the muscles controlling eye movements.
- The motor units of the muscles controlling the larynx are as small as 2–3 fibers per motor neuron.
- In contrast, a single motor unit for a muscle like the gastrocnemius (calf) muscle may include 1000–2000 fibers (scattered uniformly through the muscle).

This is an interesting observation for the development of MC.

Although the response of a motor unit is all-or-none, the strength of the response of the entire muscle is

determined by the number of motor units activated.

This is the reason by which MC is so important. We must optimize the number of motor units that we are able to activate if we want to achieve extreme performances in any sport.

Even at rest, most of our skeletal muscles are in a state of partial contraction called *tonus*. Tonus is maintained by the activation of a few motor units at all times even in resting muscle. As one set of motor units relaxes, another set takes over.

Two different types of muscle fiber can be found in most skeletal muscles. The Type I and Type II fibers differ in their structure and biochemistry.

Type I Fibers:

- Loaded with mitochondria and
- Depend on cellular respiration for ATP production.
- Resistant to fatigue.
- Rich in myoglobin and hence red in color.
- Activated by small-diameter, thus slow-conducting, motor neurons.
- Also known as "slow-twitch" fibers.
- Dominant in muscles that depend on tonus, e.g., those responsible for posture.

Type II Fibers:

- Few mitochondria.
- Rich in glycogen and depend on glycolysis for ATP production.
- Fatigue easily because of the buildup of lactic acid during glycolysis.
- Low in myoglobin hence whitish in color.

1. Voluntary muscle contraction

- Activated by large-diameter, thus fast-conducting, motor neurons.
- Also known as "fast-twitch" fibers.
- Dominant in muscles used for rapid movement.

Most skeletal muscles contain some mixture of Type I and Type II fibers, but a single motor unit always contains one type or the other, never both.

2. Voluntary muscle relaxation

The muscles have always a permanent state of contraction, called tonus, in every moment, including sleep.

One of the purposes of muscle control (MC) is the reduction of the level of involuntary contraction to a minimal degree.

The fundamental processes to achieve complete relaxation are based in the comparison between the contracted state and the relaxed state in every muscle.

As a result, deep and controlled relaxation can only be learned through individual MC.

3. General methods to attain MC

We can define MC as *the ability to contract and relax voluntarily isolated muscles irrespective of the state of motion of the controlled muscles.*

The key ideas of MC are:

1. Ability to contract a muscle. Some muscles are in positions very difficult to work by mere mechanical means, for example, the *serratus magnus*.
2. Ability to relax a muscle. Some

muscles are stabilizers and, as a result, they are contracted almost all the time, for example, the muscles of the abdominal wall. The complete relaxing of abdominal muscles is a key exercise in MC and one of the most important for a perfect health.

3. The contraction and relax must be voluntary. This implies that such actions should be performed and directed by an effort of the mind, without mechanical assistance, in advanced students of MC.
4. One common misconception about MC is that it reduces to a static series of contraction poses. On the contrary, MC teaches the complete control of each muscle or muscle group in every natural position of the body and it applies to real exercises with motion, with or without apparatus. This permits the development of the energy conservation and distribution.

In order to achieve these goals, the student of MC has to learn a graduated series of exercises of increasing difficulty. Some muscles are more responsive, for example, the muscles of the limbs, than others. Because of this, there are different methods to learn MC. All of them are good, but some are more appropriate than others in each case. The student should test several methods in order to discover the best for him or her.

The general methods of MC development are:

- *Isometric self-resistance (ISR)*. The necessary resistance to feel the muscle contraction is provided by a manual opposition to the motion of a certain muscle group. Typical examples of this method are the vertical abdominal

isolations and the mobilization of shoulder blades.

- *Dynamic self-resistance (DSR)*. Is the application of ISR to real motion. One part of the body moves against another along the range of motion of the first part.
- *Antagonistic muscular resistance (AMR)*. In this case the resistance is provided by the simultaneous co-contraction of a agonistic-antagonistic pair of muscles. This method is the base of imaginary or internal resistance free-motion systems. This is a very valuable method for testing MC in motion, but it is not pure MC and it is not a goal in itself for a serious MC student, because it hinders the relaxation of the antagonistic muscle.
- *Light dumbbells (LD)*. This was one of the most used methods by old time strongmen, including Maxick. It provides a very easily contraction feeling over a large number of muscles. MC can be obtained trying to increase the power of the contraction by conscious mental concentration. Besides, light dumbbells combined with MC are an optimal method to train the muscles in motion under maximal tension without the dangers of heavy weights. You don't need expensive appliances, because the weight is only a mean to achieve real mental contraction. You can use a pair of bottles filled with sand, for example.
- *Bodyweight leverage exercises (BL)*. These exercises are very appropriate to work large muscle groups, to harmonize the motion of the whole body, to feel the muscular tension in

situations of poor equilibrium and for general strengthening.

- *Visualization and mental concentration (VMC)*. This is an extremely important technique, extensively studied in the Part 2 of this series of articles. It must be combined with all others. This method develops the psychological connection between the mind and the body. It fixes clear body images and objectives for the individual, avoiding monotony and boredom.
- *Fine tune of muscle contraction and relaxation (FTMCR)*. Some muscles are extremely difficult to isolate (for example, the *trapezius* or the *erector spinae*). Besides, in extreme performances of MC, some portions of a certain muscle (for example, the two heads of the *biceps*, or the horizontal layers of the *rectus abdominis*), also can be isolated. In these cases, the most perfect position must be combined with a very slow and controlled tensing of the muscle. Such a slow contraction and relaxation allows the distinction of each muscle part inside an isolated muscle. This is a very advanced state of MC, but the student should try to apply it to the exercises from the very beginning.

4. The secret for super-strength development in Maxalding

The possibility of developing a great strength without appliances should be based in some smart application of the motion variables in exercise. These variables are:

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- *Tension (contractile force)*. This variable is not constant, it depends from one part of the body to another. For example, some muscles can be stimulated with relatively light loads (*trapezius*, neck muscles, ...), but some others need relatively high stimuli to contract (leg muscles, ...). Besides, this tension can be applied by pushing or pulling or some combination of the two. In each case, the muscles can react in different forms. There is an open discussion about the similarities and differences between different kinds of tension, commonly called *isometric* (contraction without macroscopic motion), *isotonic* (accelerated contraction with macroscopic motion) and *isocinetic* (contraction without acceleration performed at the same speed along the range of motion). A lot of things have been written about these types of contraction and their applications to training. In fact, all of them form a sort of continuum because all imply microscopic motion of muscle fibers. Besides, there are many misconceptions in these concepts from the point of view of a serious physicist. For example, many authors define *isocinetic motion* affirming that it is done with “constant velocity”. This is wrong, because in humans, the motion of joints produces variations in the angle of motion and, in consequence, the physical velocity changes with angle, producing centripetal acceleration and force. In this case, the speed (norm of the velocity) is not the only variable. Because of this, leverage exercises can produce huge amounts of physical load without heavy weights only varying the angle of motion, and the elevation of the same weight by the same muscles produces very different tension depending on its relative position.
- *Duration*. The tensions can be generated quickly, slowly or in a graduated form. In some parts of the same exercise, it could be necessary to perform accelerated motions and in other parts you must sustain a nearly isometric effort. Even in the same part of the exercise, some muscles are isometrically contracted supporting the principal contribution to the equilibrium (stabilizer muscles) and some other are moving quickly. With respect to duration, the results are not clear because we do not know some variables. Are the same muscle fibers contracting all the time when we apply them a long isometric tension? Has the same effect a long isometric contraction of low intensity than a short burst of high intensity tension? Which are the optimal times for strength, power, mass or endurance development? Which are the secondary effects of specific training times, for example, can develop endurance a strength training system? Probably, the same continuum principle apply here and concrete times can vary a lot from individual to individual.
- *Repetitions*. A very considerable part of sports research has been directed towards the optimal number of series and repetitions for a specific task. I think, as I shall comment in Section 6, that the importance of this factor is generally overestimated. You can develop extreme strength and endurance from a very reduced

number of performances of the same exercise in one series. The reason for this overestimation can be found in the crazy search for maximal hypertrophy that prevail in bodybuilding circles. The old time strongmen looked for real strength and endurance and their ideal of physical perfection was nearer to classical proportions. They cared of their bodies and varied frequently the number of repetitions and sets depending on their energy. As a general rule, they established that 3 sets of 6 repetitions with good form of any appropriate exercise is sufficient for most purposes. In fact, Maxalding is the only training system that recommends the performance of only one set per exercise and very few repetitions. The reason will be shown later.

- *Position (angle, extension and equilibrium).* Generally, there are a lot of weak points in our anatomy. They are responsible for many of our physical limitations. Because of this it is fundamental to reinforce these areas with specific exercises which work the muscles and the joints along every possible range of motion. One of the most severe misconceptions about MC and its applications to exercise, is the notion that MC is the same that *peak contraction*. Peak contraction is a very limited, and dangerous in some cases, form of exercise, because it produces a high blood congestion in a contracted muscle in its most favourable position, generally at the end of the range of motion, with the joint fully flexed (muscle flexing). MC, however, pursues the strengthening

and control of every muscle along the entire range of motion, specially it emphasizes the weakest links and positions. There are many proofs of this idea. Maxick himself advice to contract several muscles in different positions in his book *MUSCLE CONTROL*.

- *Frequency.* Nowadays the most accepted trend for strength training is to work intensively (preferentially until failure) 1-3 times per week. The schedule of Maxalding is very different. The advice is to train every day, listening your own body and never until failure or excessive fatigue. The fidelity to a daily training schedule is extremely important for Maxick and Monte Saldo.

Once I commenced to train I was determined to continue to do so regularly. Not only were the muscle control exercises performed every evening but I indulged in some calisthenics in my unheated bedroom until, glowing and covered with perspiration, I fell into my bed ready for a sound slumber.

(YOU ARE AS STRONG AS YOU WISH TO BE, Maxick)

When training and practising always use a schedule. Do not work promiscuously, because constant repetition is absolutely essential for attainment of great skill in any branch of sport.

(HOW TO BECOME A GREAT ATHLETE, Maxick)

One of the temptations of a maxaldist is to believe that he masters completely MC. This is practically impossible, MC is an endless science and art. Try to perfect the controls every time you

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perform it. There are hundreds of possible isolations and thousands of combined controls. Feel every muscle fiber, every attached tendon or ligament, feel your nervous energy, try to control your internal organs, analyse every thought and sensation. Remember that you are an infinite. Explore this inner infinite in deeper and deeper ways. *The self-control is the sure way to absolute freedom.*

The great results achieved with the low number of repetitions prescribed in the Maxalding curses can be explained by a careful study of the original training methods of Maxick and Monte Saldo.

In a modern fashion, we can differentiate two main systems of training.

- *Analytic muscle control (AMC).* An isolated muscle or muscle group is contracted and relaxed in every possible position avoiding antagonistic interferences of another muscles. The tension is generated via the FTMCR technique and analysed in little increments of the range of motion. This method is one of the best to reinforce concrete muscle actions in difficult positions and it is a fundamental system in order to master complete relaxation and energy distribution. For optimal results you must combine SMC (static muscle control) for 5-10 breathings with BMC (ballistic muscle control) for 10-30 quick (1 breath each, contract while you are exhaling and relax when you inhale), but concentrated, pulsations. Perform first SMC and after this, without rest, BMC for the same isolated muscle.
- *Step-by-step (or strategic) muscle*

control with resistance (SMCR). This method is named from analogy with a step by step motor. The method is based in fixing securely every small portion of the motion involved in an exercise, performing it in an extremely slow form, teaching the body to feel the muscles that are really acting in each part of the movement. This is a very advanced technique and must be used very progressively. Intelligently used, it is a perfectly safe method, much safer than weightlifting. Use very small loads (or none at first stages, a little stick would be sufficient), the key is correct MC, and begin with a count of 1 breath per increment of the range of motion. If you feel excessive fatigue in some part of the exercise, relax for 5-10 breathings before going to another part of the motion. Increase the times in amounts of 1 breathing weekly if you are comfortable with this, if not, you must wait for another week to increase time.

There are two variations of the SMCR system:

- *Contracting tension.* You contract the muscles involved in the motion with additional voluntary MC.
- *Relaxing tension.* You try to relax all muscles in the body, including those that are working, as far as they can support properly the desired action. The purpose of this method is to teach the body how to optimize its reserves of energy. Obviously, this method should not be used with any exercise which demands a lot of concentration and skill (for example, handstands, bridges, ...).

Both methods can (and must) be

combined, ideally in weekly cycles. Here are some examples of exercises performed with these techniques and testimonials that prove its use by Maxick.

Consider a dumbbell swing performed with a light weight, but sufficient to tense the muscles. This is a typical general conditioning exercise which works almost every muscle in the body. Use only one arm each time, alternating them.

Raise the dumbbell in a step-by-step motor fashion, elevating the weight on very little increments of a few cm, keeping perfect form and position for a count of 1-10 breathings each depending on your capability.

A careful analysis of the tension sensation while you maintain the position reveals the contraction of the following muscles.

- ✓ Forearm.
- ✓ Deltoid.
- ✓ Erector spinae.
- ✓ Thighs.
- ✓ Muscles of the upper arm in elevated positions.

Try to intensify the contraction by means of MC. This is a clear application of contracting SMCR. With this method, a single repetition a day, correctly performed, in addition to SMC and BMC exercises for all muscles is sufficient for developing high levels of strength and coordination in most cases. As a suggestion, one single exercise can be 1-2 minutes long at least with this method.

You can apply instead the relaxing technique in the same form, but in this

case, try to relax every muscle in the body as far as you begin to feel some difficulties to raise the dumbbell. This would be an example of the relaxing SMCR.

Apparently “easy” bodyweight exercises can be turned in extreme feats of strength and endurance by means of these techniques. Think in push-ups and try to perform one repetition with contracting SMCR, you will discover a new dimension in non apparatus training.

The SMCR system has many advantages. For example, you do not need any expensive appliances for developing a top quality natural physique. A simple plastic bottle filled with sand and attached to a 1m stick can proportionate an awesome workout.

For maximum development I suggest the use of an Aston's antidumbbell. It is simple a weight of 1-5 kg (depending on your abilities) attached to a stick. You do not need to make it by yourself, an adjustable disc dumbbell with the weight attached only to one end is almost inexpensive and is perfect for our purposes. Perform general conditioning lifts, like the mentioned swing, with SMCR, gripping the dumbbell from the free end, the most separated from the weight. In this way you can challenge all your body parts with a minimal chance of injury. If you don't like the intense grip of the antidumbbell, you can use a common dumbbell with similar efficiency.

The use of the SMCR technique is endorsed by several references in Maxalding writings. For example, the description of Exercise P of Maxalding says

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Tilt the weight of the body until it is supported mainly by the left arm... For great strength, perform a very slow repetitions. For speed, perform a few quick repetitions, almost bouncing the body from the ground.

This is common advice in most exercises. The combination of MC with specific sport training multiplies its effects.

If you combine your ordinary training with the work of controlling the muscles you will attain a speed and strength in your sport that will surprise you.

(HOW TO BECAME A GREAT ATHLETE, Maxick)

The relaxing method is as important as the contracting one. In some cases the use of specific massages can be very helpful.

Gain control over all muscles of your body by intelligent application of the mind, and increase their suppleness and responsiveness by carefully kneading and manipulating any muscles that appear too hard when relaxed.

(HOW TO BECAME A GREAT ATHLETE, Maxick)

The effect of MC over muscle tone is very remarkable. The relaxed muscles turn in a extremely soft state in touch. This produces a very pleasant sensation and well being.

One of the most admired Maxick's feats, a clear and extreme use of the SMCR method, is related by Tromp van Diggelen.

Here is just another "stunt" that even Saxon would have found hard, I used to lie with my back on Max's open palm

and he would tell me to close my eyes and it is honestly true that he would then press me up so slowly that I would not know I was at arm's length until he told me to open my eyes.

(A SUPERMAN - MAXICK! Tromp van Diggelen)

The Maxick's jerking power from the shoulders was so huge that no lightweight weightlifter more than 60 years later had been able to surpass it yet.

While all the preceding subjects in this biographical series have been either heavyweights or light-heavyweights, here is a lightweight strongman whose accomplishments were so extraordinary that they warrant being included in any list of weightlifting records.

Maxick, whose name was "anglicised" from the German, Max Sick, was anything but a man in poor health! Paradoxically, he was to become known as "The Muscular Phenomenon." He was born in Bregenz, a town in the extreme western tip of Austria, on June 28, 1882. Although as a child he had been sickly and of poor physique, by long training in weightlifting and gymnastics he became a phenomenon of muscularity and strength. Although standing only 5 feet 3 3/4 inches and weighing at his best from 145 to 147 pounds, Maxick set records in weightlifting that few heavyweights of his day could equal.

Tromp van Diggelen, a Dutch strongman and wrestler, who knew and in some cases acted as a mentor to a number of the greatest European strongmen of his time, brought Sick from Munich to London, where the two men arrived on October 26, 1909. It was

shortly after this that van Diggelen and an English lightweight strongman named Monte Saldo, who was later to be associated with Sick in business, decided that the Bavarian athlete should have a name more in conformity with English usage. Accordingly, they shortened his two names into one: Maxick.

While Maxick, early in 1910, did some very fine weight-lifting in London, nearly all his greatest lifts were performed either in Germany (Munich) or in South Africa (Johannesburg), where in 1913 he visited Tromp van Diggelen.

Here are Maxick's weightlifting records. All were performed as a professional athlete and at a bodyweight that never exceeded 147 pounds:

Right Hand Military Press, 112 pounds ("performed with considerable ease").

Right Hand Snatch, 165 pounds. Right Hand Swing with Dumbbell, 150 pounds.

Right Hand jerk (shouldering the barbell with two hands), 239 pounds in Munich and 240 pounds in Johannesburg.

Two Hands Military Press, 230 pounds (made at a bodyweight of 145 pounds).

Two Hands Clean and jerk with Barbell, 272 pounds.

Two Hands Continental jerk with Barbell, 322 1/2 pounds in London and 340 pounds in Johannesburg. (In the Two Hands Snatch, he should have been capable of about 215 pounds.)

Of the foregoing lifts the most

extraordinary were the one and two hand military presses and the one and two hand jerks.

Maxick's Two Hands Military Press of 230 pounds, which he performed in 1909, would be equivalent today to a lift in the same strict style of about 267 pounds, or to a Two Hands Olympic Press of about 312 pounds. That is to say, in pressing power Maxick was the equal, in his day, of any of the lightweight Olympic champion pressers of the present time. In the One Hand Continental jerk, no such comparison can be made, since this style of one-arm lifting is no longer practised. In bringing a barbell "clean" to the shoulders with both hands, Maxick's record of 272 pounds would be equivalent to about 320 pounds today.

This, while a good lift, is a long way below the 360 pounds or more that the best lightweights clean and jerk today. It is rather in the jerk from the shoulders overhead that Maxick is seen to best advantage, and his record of 340 pounds in this movement would be equal to no less than 400 pounds today. This is truly phenomenal lifting. It would appear to surpass by at least 20 pounds the best jerking ability of any present-day lightweight lifter.

Although in Maxick's day the great heavyweight professional Arthur Saxon was astonishing the world with his ability in the Bent Press, Maxick never cared about this lift. He felt that it was more a feat of long-developed skill than of straight strength. Be this as it may, Maxick must have developed a style of one-arm pressing that was nearly equal in efficiency to the Bent Press. This is deduced from the statement made by

4. The secret for super-strength development in Maxalding

Tromp van Diggelen that in Johannesburg in 1913 Maxick "side-pressed" the 185-pound Van Diggelen no fewer than 16 times in succession with one arm. This repetition-lift was equivalent to a single one-arm press with over 270 pounds!

Outside of straight weightlifting, Maxick showed up equally well. Indeed, in hand-balancing and gymnastics he could perform some astounding feats. While I do not have any figures on his actual records in handstand press-ups, these can be deduced from his known ability to do a Two Hands Military Press of 230 pounds while weighing only 145 pounds himself. This lift, at that bodyweight, was equal to no fewer than 34 handstand press-ups on the floor, or to 21 "tiger-bend" press-ups, or to 22 handstand press-ups on a bench, touching the chest each time. And since Maxick was a skilled balancer, there can be little doubt that he was actually capable of these estimated press-ups.

According to Tromp van Diggelen, who so informed me in a personal letter about 1960, here are some of the feats that Maxick performed when he visited van Diggelen in Johannesburg in 1913:

1. In a contest at finger-pulling, in which Maxick was "unbeatable," Maxick could pull a 200-pound opponent clear across the table that separated the two men.

2. He pressed van Diggelen (185 pounds) overhead 16 times with his right arm, while holding in his left hand a glass of beer full to the brim, without spilling a drop. Earlier that same day, he had pressed Fred Storbeek (205 pounds), who was then the heavyweight British Empire Boxing Champion, 11

times with his right arm.

3. Holding van Diggelen aloft on one arm, Maxick ran up two flights of stairs with him and then ran down the two flights. Then standing on his hands, he in that position ran up the two flights and down again! These stairs were in the building known in 1913 as Chudleighs', but today as the Bazaar Building.

4. At the Carlton Hotel one night, six empty champagne bottles were put before him. Each of these he filled three-quarters full with water and then, taking bottle after bottle by the neck with his left hand, he brought down the palm of his right hand on the open neck, causing the bottom of each bottle to smash out!

As would he expected in view of his extraordinary strength, Maxick had a superb muscular development. So completely were all his voluntary muscles under his control that he could make any desired group "dance" in time to music. He was, in fact, one of the first great exponents of the art of "muscle control," and could do things in this department that astonished even the great Eugen Sandow, who himself was an expert in the art.

For many years, Maxick made his home in Buenos Aires, Argentina, where he conducted a gymnasium and health studio. He also went periodically on exploring expeditions into the Matto Grosso of Brazil.

Maxick died in Buenos Aires about 1960, I believe, at which time he would have been about 78 years of age.

Of him it could almost have been said, "We shall not see his like again."

At least, during the period of nearly 60 years that has passed since Maxick was in his prime, no other man of his size has equalled him in all-around strength.

(THE SUPER ATHLETES, David P. Willoughby)

Many opine that the MC abilities of some Indian yogis or posterior muscle controllers are far superior to the Maxick's ones. About this, in concrete about Otto Arco claims, you can read the Tromp van Diggelen's comments in the Part 2 of this series. Unfortunately, we cannot judge precisely the real MC abilities of Maxick, which included voluntary control of many internal organs, including the heart, because his most important and detailed photographs were lost.

His physique and strength were maintained at a very high standard and he practised muscle control throughout his life. It is tragic that the photographs he sent back to this country and those of Monte Saldo were destroyed when London was blitzed in World War Two.

(THE IRON GAME, David Webster)

Many Maxick's friends, including Aston, commented that no picture could make justice of the Maxick's physique and abilities.

5. The way to super-control, analytical muscle control (AMC)

In the previous Section, I have mentioned this technique. The use of AMC permits a complete workout of any body part without the need of any resistance exercise, except for purposes

of balance of external forces and verification of own strength levels. With this method you can devote even the 90% of your training time to pure MC.

The study of the AMC was motivated to me by the only serious shortcoming of MC, the real possibility of reinforcing the tendons as much as the muscles with Maxalding.

There is an obvious fact, a muscle cannot be contracted without tensing his attached tendons or ligaments to some extent. Actually, I personally can feel, see, even hear (like a sudden click in ballistic controls) extreme tensions in the tendons of the muscles involved in MC exercises. Why MC could not reinforce tendons?

This was very intriguing for me, because Maxick himself did not recommend MC for tendon strength. Then I decided to experiment some new controls in order to isolate and increase the tendon tension in concrete insertion points by means of pure MC.

I limited my training exclusively to MC, without any form of external resistance for two months. To my surprise, my general strength and endurance did not decrease, but it increased remarkably in typical weak points of some bodyweight exercises (for example, one-handed push-ups). In fact, my first application of MC was the rehabilitation of a shoulder injury. My shoulder tendons were then much more resistant than before.

I began to control the muscles in every possible position in little angle increments. I have been read that some maxaldists and Jubinville were able of isolating some muscle parts in a

5. *The way to super-control, analytical muscle control (AMC)*

transverse way, like the two heads of the biceps or the fine horizontal control of the abdominals. Although these controls are extremely difficult, because the complete relaxation of the surrounding muscle layers is impossible, I have been success applying the FTMCR and VMC techniques. But the transverse controls were not sufficient for increasing tendon tension at concrete insertion points. After months of daily and patient practice, one evening I discovered that I was able to concentrate mainly in the contraction of each extreme longitudinal portion of the biceps.

The key was the previous daily control of the muscle in every position from peak contraction to stretch. The feeling of the alternating isolation of the upper and lower sections of the biceps was absolutely amazing. Shortly after, I discovered that the majority of voluntary muscles in the body can be also isolated differentially along its line of motion to some extent.

AMC is then the ability to contract and relax different parts of the same muscle in transverse and longitudinal lines with respect to its natural line of motion.

I want to make clear that I do not suggest to eliminate external resistance exercises from your training. These exercises are absolutely necessary for real strength balance, but the AMC system allows you to use appliances with a minimal amount of effort and time.

The application of AMC to my workouts changed my ideas about some supposed limitations of the Maxalding system and opened to me an extraordinary and unexpected way to super muscle control.

6. **General rules for MC success**

1. Don't strain or force your muscles. Use the coaxing method.
2. Never train to failure, but train to slight fatigue.
3. Don't allow that your muscles vibrate or they are absolutely rigid. Such practices make difficult the blood flow to the muscles and can have a negative effect over the nervous system.
4. Keep comfortably warm all through the training time and after it. It is very convenient to have a moderately cold shower immediately after the exercises, followed by a brisk towel massage. Massage the muscles always from limbs towards the heart.
5. Count the time with your own breathing, don't use any kind of watches or clocks. Concentrate absolutely in your exercises.
6. You can listen music for performing the exercises in a more pleasant environment, but keep it in a low volume, choose a peaceful music and don't put your mind on it. If you are able to be unaware of the music, you are performing well the exercises.
7. **Don't hold your breath under any circumstance.** In first stages of abdominal control, don't hold the breath more than 5 s and have several full breaths in between. It is unnecessary and risky forcing breath for increasing the performance of abdominal controls, because the very advanced maxaldist should be able to perform the exercises (including the one-sided isolations) while he is breathing.

8. Practice full tidal breathing during exercises. Full tidal breathing will be described fully in another article. In first stages of MC it is sufficient to breath exclusively through the nose without forcing the thorax or the abdomen. Don't open the mouth in any case.
9. It is not good for the beginner to sustain the contraction more than 5 breathings (about 7-10 s), in general, because the concentration decreases quickly for longer times, but don't be satisfied with shorter periods, because the contraction would not be too effective in terms of strength and muscle development. Besides, it is more productive a series of moderate time controls separated by a short count of resting breathings than an unbroken forced contraction of the same duration. For advanced students, see the next section.
10. Do 1-2 repetitions per day of each principal exercise for muscle toning. If you want to develop a great strength and control, you must perform 1-5 series a day of 1-2 repetitions of each isolation exercise. But be careful, don't overtrain yourself. If you do exercises for all body muscles daily, it is more reasonable to keep the series to a low number, 1 or 2. Remember that a complete body routine for all important muscle isolations, with 10-breathing SMC contractions and 10 BMC pulsations (about 30-60 s per exercise), can last about 1 hour. A low number of series also avoid boredom and lack of concentration. For extreme endurance, practice compound controls for a larger number of series, but with the Maxalding energy conservation principle in mind. I think that 10 series of 10 repetitions each should be a maximum (about 1000 s or 15 min per muscle group). For advanced students, see the next section.
11. Wear as little clothes as you reasonably can. Use very comfortable sport clothes that allow you complete free motions of each body part. Choose clothes with hypoallergenic fibers that permit a throughout perspiration while they keep you warm.
12. Drink a little glass of no cold water before exercising, specially before doing the abdominal controls, except if you want to perform extreme isolations for which a completely empty digestive organs are essential.
13. The best time to practice MC is two hours before dinner in the evening, because the muscles are much more responsive. For optimal results, you can do several training sessions, for example, one in the morning and one in the evening, but this is not absolutely necessary if you perform daily all exercises in order.
14. It is very convenient to warm the body and activate blood circulation before performing MC by means of gentle exercises as walking in place, but the breathing rate must be kept quietly and constant. A very good practice, that combines MC with aerobic training, is to perform 10 repetitions of alternating knee and arms raising in place, very similar to exercise 1 of strongfortism, between each MC performance, with no rest. This combination improves circulation and multiplies the effects

of MC. It is also an excellent fat burning system.

15. The use of a large mirror can be useful, but an excessive dependency on the mirror is very harmful. Try to concentrate on the feeling of the muscles and not in their real image, imagine the physique you want by means of VMC techniques while you are performing the controls. Many people fail in abdominal controls because they concentrate in the mirror image instead in the internal feeling of muscles.

7. The key to real progress in MC. Instinctive training.

We live in the era of numbers and information. All is number and people demand specific calories, food quantities and types, repetitions, series and times thinking that all of these are the key to success.

However, the real secret of Maxalding training is supreme both mental and physical concentration and, actually, it is impossible to achieve it if you are keeping your attention in the counting and completion of the prescribed numbers.

Numbers are a good starting point to beginners, but if you aim to perfect MC, you must “listen” the *language of your muscles*. Both Maxick and Saldo, among many old time strongmen, advocated for this sort of training.

Don't concentrate at all in counting your breathings, relax all your body, including breaths, except the muscle that you are controlling.

Contract slowly the desired muscle, breath quietly through the nose and hold a maximal (without strain or vibration) contraction for all the time you can without any decrease in intensity. In the very moment you feel the slightest sign of lack of concentration, muscular fatigue, vibration or rigidity, relax the muscle very slowly. Only do a repetition per muscle this way. If you want to perform more repetitions, do them when you finish all exercises in a sort of cyclic training. This is know as *instinctive training*, because you allow your own body to decide the exact amount of training it needs, instead of forcing it to perform an objective time schedule. This kind of exercising is also the best defence against monotony and boredom.

It is clear that the use of the FTMCR technique is essential for success. In first stages of MC, this can be difficult, because the student, without sufficient confidence, generally try to contract the muscles in a explosive way. Because of this, when the student is able to perform all exercises with good form, is better to increase the contraction time to 10 breathings and to do only 1 repetition. Some weeks later, the student should be able to train instinctively making an effort to ignore the breathing count and concentrating completely in the tension feeling of the muscle applying continuously the VCM technique.

Another interesting application of instinctive training is the determination of the optimal tension times for each exercise and individual.

For example, I could calculate in this way that my optimal contraction time is about 10 breathings for most exercises, of which the first breathing is used for

raising the tension to a non vibrating maximum and the last one is used for a controlled decreasing of contracting force. Also, I have found that 2 breathings is my best relax interval between contractions.

Counting breathings can contribute to your concentration if properly applied when you know your optimal times after a reasonable experimentation with instinctive training. You also can alternate both types of training.

8. MC of the muscles of the face.

8.1. *Frontalis and orbicularis oculi*

Raise slowly your eyebrows as far as you can. Keep the tension several breathings and relax.

8.2. *Zygomaticus*

Adopt a face expression like a big smile without opening the mouth. Contract the muscles slowly, keep the position several breathings and relax.

8.3. *Orbicularis oris*

Tighten the lips, pressing one against the other. Keep the tension several breathings and relax slowly.

8.4. *Masseter*

Tighten the jaws, pressing one against the other very carefully and without forcing, because you could injure your teeth. Keep the position several breathings and relax. This muscle is contracted also in the exercise 9.1.

8.5. *Tongue*

Yes, the tongue is also a muscle, isn't

it? Generally, the tongue is sufficiently worked daily because we use it for speaking and eating. But, for this reason, most important is to know how to relax the tongue properly. In advanced states of relaxation you can feel that the tongue is often the last muscle which you relax. It generally is pointing or pressing to the roof of the mouth and contracted.

Press the tongue against the roof of the mouth powerfully or press one side of the muscle against the other trying to put together both. Hold the tension several breathings and relax very slowly. Try to relax the tongue every time you remember it.

Although the exercises for the face are not common and they are often neglected, they are very important because their involuntary and permanent tension can produce stress and discomfort. Besides, a strong face muscles are a key factor in order to minimize the effects of ageing. In consequence, the ability to contract and relax voluntarily and powerfully the muscles of the face produces a lot of benefits.

9. MC of the muscles of the neck

MC is one of the better means to strengthen the neck without the risk of other exercises that implies heavy tensions or unstable positions over the vertebra.

9.1. *Sternohyoid, omohyoid and thyroidhyoid*

First stage. Open your mouth and tense your jaws (without closing them). Imagine that your are trying to masticate

a piece of solid rubber or something similar. If you do this properly, your *hyoids* should expand like wings in both sides of the neck.

It is practically impossible to control only one side if you keep the jaws in their natural position. But if you move the inferior jaw to one side, the control is relatively easy.

Second stage. Keep the mouth closed and concentrate in the *hyoid* and *masseter* muscles. Tense them at the same time. You can achieve a very powerful contraction and expansion of these muscles. Don't hold the contraction a long time, because these muscles tend to vibrate shortly.

9.2. Sternocleidomastoid

Turn the head slightly to one side keeping the neck erect.

ISR technique. Resist the head in this position with the opposite hand, as if you want to turn the head to the side. Apply the tension very slowly in order to distinguish the feeling of the different muscles that contribute to the resistance.

AMR technique. Try to turn the head from one side to the other contracting muscles until you feel that some muscles act like brakes to others. Perform this slowly as far as you can relax the antagonistic muscles while you keep the tension on the agonistic ones.

VMC and FTMR techniques. Turn your head to one side. You should feel a slight tension in the *sternocleidomastoid* of the part of the neck which is turned to the side. Concentrate in this tension and try to intensify it by means of mental contraction.

Finally, you should be able to contract the *sternocleidomastoids* without turning the neck and without assistance. The voluntary isolation of both muscles is favoured if you tilt downwards the neck a little.

9.3. Splenius capitus, levator scapulae, posterior scalene, middle scalene

ISR technique. Try to move the neck leaning it forward and backwards resisting all the time with the hands interlaced behind the head. Apply the tension very slowly. Change the position of the hands, resisting now the same motion with the hands pressing against the forehead.

After this, bend the neck laterally both sides resisting with the same hand.

If you do these exercises slowly and carefully you should discover that some muscles tense most intensely in the back of the neck, and some others contract more strongly at the sides of the neck. With practice, you will be able to contract these muscles voluntarily and to isolate the *sternocleidomastoids* from the muscles of the back of the neck.

Don't force the tension, because you would involve another muscles like the *trapezius* or the *serratus*.

AMR technique. If you bend your neck laterally trying to touch the shoulders contracting the muscles, you can feel the *scalenes*. However, if you tilt you head forward and backwards, you would tense more intensely the *splenius* and *levator*.

When you are able to contract the different muscle groups of the neck, the final isolation is favoured by small changes in the relative position of the shoulders and the neck.

10. MC of the muscles of the back

MC of the back muscles is extremely important, because the appropriate control of the back is the key to many of the most demanding strength tests. Besides, MC is the best technique, if properly learned, to relax and strengthen these frequently neglected and damaged muscles. The benefits are countless, pain relief, posture improvement, relaxing of the spine, increases in flexibility, etc.

10.1. Preliminary ISR exercises for shoulder blades and back mobility

A correct mobilization of the shoulder blades is one of the most important factors in order to increase the breathing capacity and to develop the flexibility of the back, shoulders and thoracic box.

10.1.1. Loosening of shoulder blades with arms stretched over head

Elevate your arms stretched vertically in line with your back. Try to keep your back in a natural straight and relaxed position. If you have any tension in your upper back muscles, the exercise will not produce the desired effect. Of course, this is difficult to achieve in the first sessions, but you will be able to relax properly in a progressive way.

Interlace surely your hands in the top position and pull with them outwards slowly, but with the maximum effort you can perform without producing any vibration in the muscles. Keep the tension 5-10 breathings and relax. You can repeat the exercise 2-5 times.

At the time of pulling, you should feel a little upwards movement of the shoulder blades. The amount of elevation

and separation of the shoulder blades depends a lot on bone structure, joint elasticity and previous training. You should not be disappointed if you cannot reproduce the excellent performance of Maxick. You must pursue your own perfection. For example, Aston was a great muscle controller, but the separation shown in his pictures are modest in comparison with another maxaldists.

10.1.2. Loosening of shoulder blades with arms behind the head

This exercise is very similar to the previous one, but the arms are bended and the hands interlaced behind the head. In this way you vary the position of the muscles and you facilitate a more complete shoulder blades mobilization.

10.1.3. Dynamic mobilization of shoulder blades with DSR

This exercise is a combination of the exercises 10.1.1 and 10.1.2 in a DSR fashion. Grasp your hands firmly behind your head and raise the arms towards sky in a straight line with the back, pulling outwards all the way. Without decreasing the outward tension, lower your arms to the initial position.

Inhale while you are raising your arms and exhale in the downwards movement. The pace of exercise must be guided by the breathing.

10.1.4. Reinforcement of upper back muscles

Adopt the position of exercise 10.1.2, but in this case you must push inwards with both hands. This exercise change the action of the upper back muscles and reinforce the shoulders.

10.1.5. Additional loosening of shoulder blades for rigid joints

This exercise must be performed only by people with difficulties for loosening the scapulae by means of the previous exercises.

Grasp your hands behind the lower back and pull strongly outwards. Keep the tension 10 breathings while you try to relax all back muscles completely.

10.1.6. Combined shoulder blades loosening and bending for lateral back flexibility and reinforcement

Adopt the position of exercise 10.1.2. While keeping the outward pull, bend very slowly the back to one side laterally. The shoulders must be in line with the hips. Don't force your limits, the flexibility will increase with time and patience.

Inhale in the top position and exhale slowly (every time with the nose) while you are bending the back.

Bend to the opposite side and repeat 5 times.

10.1.7. Reinforcement of *erector spinae* muscles

Place your hand palms pressing against your gluteals and bend your back backwards very carefully keeping the tension generated by the palms.

Now change the position of the palms and place them pressing against the thighs. Bend your back forward very slowly keeping the tension as far as the back forms a perpendicular angle with the straight legs.

10.1.8. Isometric and dynamic pull-ups or chin-ups

These are very good exercises for strengthening the back muscles. If you cannot perform complete dynamic pull-ups, grasp the bar and pull isometrically with maximal effort without vibrating for a count of 10 breathings. Relax and repeat 5 times.

10.2. Preliminary AMR exercises for back reinforcement and flexibility

10.2.1. AMR pull-ups

Although it is not necessary, it could be helpful to grasp a 1.5 m stick with both hands for this exercise.

Rest the stick firmly grasped with hands at shoulder width behind your head. Raise slowly the stick in line with your shoulders as far as your arms are perfectly straight. Try to contract all your back muscles for the raising. Don't concentrate in hardening your arms (a common tendency), direct all your energies to the back muscles. Inhale in this part of the exercise.

Do the same for the downwards motion, exhaling. Repeat 3-5 times.

10.2.2. AMR rowing

Grasp firmly the stick with both arms in front of your chest at shoulders length. Bring the stick towards your chest as far as you can touch the pectorals, contracting powerfully all your back in motion. Inhale in this part. Go to the initial position while exhaling. Do 3-5 times. It is very important to do the exercises along the entire range of motion.

10.2.3. Back forward bending

Raise your arms and with them straight, bend your back downwards tensing all muscles in the back as far as you reach a perpendicular angle with the legs. Probably you will tend to contract your abdominal muscles also, this will put additional resistance to the motion in first stages, but you must try to reduce this antagonistic contraction progressively.

Inhale in the top position and exhale while you are bending.

There is a lot of discussion about the convenience of bending the spine completely. Trying to do MC accesible to most people and extremely safe, I consider best to keep the maximum angle to 90°.

10.2.4. Back backwards bending

Adopt the same initial position than in exercise 10.2.3, but now bend backwards very slowly and carefully. Tense all muscles in your back all the way.

10.2.5. Back lateral bending

In the same initial position as the exercises 10.2.3 and 10.2.4, bend the spine laterally to one side alternating both. Inhale in top position and exhale in the lowest one. Tense all muscles in your back.

10.3. Preliminary back exercises with LD

The use of light dumbbells for achieving MC can be very beneficial. The general, and very important, recommendation is to avoid any antagonistic action. Relax all your muscles and concentrate only in the

muscles that are performing the action.

This necessary relaxation is the reason by which the use of light weights is mandatory. Exercises with challenging dumbbells will produce a struggling that would prevent the necessary concentration in the agonistic muscles and would tend to contract the antagonistic ones for protecting the ligaments. This is an instinctive protective mechanism of the body which only can be minimized with a careful and continuous practice of MC.

The use of 1-5 kg dumbbells should be sufficient in general in order to learn MC.

10.3.1. Back bending

Grasp one dumbbell with both hands over the head with arms fully stretched. Separate feet about 1 m. Bend the back laterally without twisting as far as you can. Apply the SMCR technique very progressively.

10.3.2. Back twisting

Grasp one dumbbell with both hands and arms fully stretched. Twist your back from side to side in circles applying SMCR.

10.3.3. Several lifts which involve the back muscles

- One handed jerk.
- Two hands jerk.
- One handed swing.
- ...

Use SMCR in all lifts with very light weights. Select only two or three lifts per workout. Don't do many of them in the same training session.

10.4. LD technique with Aston's antidumbbell

The Aston's idea for lifting practice has been described in Section 4. The use of an antidumbbell has many advantages for the student of Maxalding, because the lack of equilibrium and the additional force momentum involve a greater concentration and help to feel the weak points in muscle action. The weight must be comfortably easy to handle.

10.5. Preliminary BL back exercises

One of the favourite Maxick's exercises were handstand press-ups, the LB exercise of Maxalding cures, performed dynamically. Pull-ups have been discussed before.

Although handstand press-ups are, without doubt, one of the best exercises for back development, it is very difficult and unsafe for many people, although performed against a wall. One easier alternative is to elevate the feet over something stable, like a bed, and adopt a body form similar to an inverted "V" and from this position to do push-ups. If you apply the SCMR to this exercise in motion, you can obtain many of the benefits of a complete handstand with little probability of injury.

Another very easy and good exercise for contracting and isolating to some extent the *erector spinae* is simply hip raising from a supine position with the legs flexed forming an angle over the floor. This exercise, done with SMCR, eliminates the need of performing other controversial exercises like the full bridge (exercise T of Maxalding).

10.6. Isolation of back muscles

10.6.1. Trapezius

There are three basic techniques for isolating the *trapezius*. They are shown in order of increasing difficulty.

1. *Shrugging*. Raise your shoulders and try to press both sides one against the other and against the back of the neck. Keep the tension 5-10 breathings and relax completely.
2. *Contraction in a crucifix position*. This position allows a very powerful contraction of the whole *trapezius*. Raise your arms straight in line with your shoulders (90° with the body line) and shift them slightly backwards. You should feel now the tension in the *trapezius*. Concentrate on it, imagine that it adopts the same form you could observe in Maxick's pics and intensify the contraction by voluntary action. Keep the contraction for 5-10 breathings and relax.
3. *Direct contraction* (very difficult in words of Maxick). This control demands a lot of patience, but it is very favoured by the practice of the first two methods. Relax all muscles in the back. Try to move (without the actual motion) very slowly the shoulders forward, but not upwards. Maintain the shoulder length and the back very slightly bent forward. In most cases the pectorals are slightly contracted to aid the control of the *trapezius* in this position. You can aid the contraction pressing with the palms of hands laterally over the hips or pressing one hand against the other in front of the abdomen or interlacing the hands behind the lower back and pressing. Keep the contraction

steadily without forcing the pectoral help. Sustain it for 5-10 breathings and relax completely.

You must increase the difficulty slowly and be patient. If you can control the whole *trapezius*, you can control only one side easily. Concentrate on the desired part and contract it slowly, relaxing pectorals as far as you can.

Advanced controls.

1. Longitudinal AMR (LAMR). In very advanced stages you should be able to feel three contracting zones in the *trapezius*, lower, middle and upper. In the lower part you can observe a transference of contraction from the *erector spinae* to the *trapezius*. Try to concentrate the tension in the separation of both muscles. In the middle part you can differentiate the tension of the *trapezius* because it does not tend to expand the shoulder blades. The upper zone is most easily distinguishable, but its isolation produces in general a tendency to contract powerfully the pectorals. This is not severe if you can isolate this action from the expansion of shoulder blades, also favoured by pectorals. In the case of upper *trapezius*, the upper pectoral layer should be felt and relaxed if possible.
2. Transverse AMR (TAMR). The isolation of one side of the *trapezius* is relatively easy, once mastered the complete control (in some cases it is easier to try the one sided control first). Try to combine LAMR and TAMR controls generating a wave tension feeling over the muscle. For this, relax when you inhale and contract the desired part while you are exhaling. Don't force breathing at all,

any forcing implies lack of control.

3. SMCR. This is an excellent exercise for overall body conditioning, but now I want to concentrate in a powerful action of the *trapezius*. Put your arms stretched at both sides of the body and raise them in a SMCR fashion as far as they form a 90° angle with the body (crucifix). Work very progressively concentrating on your *trapezius*. Use very light dumbbells at first and never surpass a limit of 5 kg with this technique, it is unnecessary and excessively demanding.

10.6.2. Voluntary expansion of shoulder blades

The most common errors in performing this exercise are the tendency to contract also the *latissimus dorsi* and the involuntary expansion of the rib box with forced inhalation (a very harmful practice).

Place both hands firmly resting over the hips, you can help yourself at first stages pressing steadily both hands (or one at time if you want isolate only one side) against the hip bones. Now concentrate all your attention over the extreme points of the scapulae and expand them.

Many people with rigid joints, including me, could be disappointed at first with the small shift produced. In some cases even you can feel some sort of click while you are expanding the scapulae in a ballistic control. A careful study of the pictures of Maxick and of another Maxalding pupils reveal that the spectacular expansions depends a lot on bone structure and another elasticity factors of the ligaments. Go by the alternating tension-relax feeling and

don't be obsessed with your image on the mirror.

The isolation of one shoulder blade at time is as easy as the complete expansion and should be performed in an alternating fashion.

Advanced controls.

In this case there are no different parts to isolate, but you can apply the FTMCR to the expansion, doing it very slowly. If you have extremely supple ligaments attached to shoulder blades, you could raise and lower the scapulae in a rhythmic and circular fashion. This is really a very spectacular control that amaze most people. If you are as inflexible as I am, you should be happy feeling the action of your muscles in expansions of a fraction of cm. MC is one of the best techniques for improving your flexibility, but cannot do miracles.

10.6.3. Voluntary abduction of shoulder blades

This control is very similar to 10.6.2, but in this case, you must bring your shoulders slightly backwards as far as you can note with your fingers (at first performances) that there is a hole between your scapulae and your back. If you have mastered previously the exercise 10.6.2, you should have little difficulty in perform correctly the abduction.

You can combine both exercises to add impressiveness to the scapulae movements.

10.6.4. *Latissimus dorsi*

This can be a difficult control due to a lack of muscle development in this zone or because this is an “all or none”

control.

The use of auxiliary exercises is very important in first stages. Pull-ups are excellent, both dynamically or statically. Specially the static ones can help you in differentiating the tension on the *latissimus dorsi*.

But, for a pure voluntary control the best is this AMR exercise. Raise your arms at 90° with respect the body (crucifix position) and bend the forearms with hands pointing to the sky. The forearms form an angle of 90° with the upper arms that are in a horizontal position. Tense your muscles and press inwards as far as you touch your forearms in front of your chest maintaining the angles. Imagine that your are pressing against some sort of gymnastic machine. The key is to concentrate the antagonistic resistance on the back (*latissimus dorsi*) and not on the pectorals. With a little practice you should be able to do so.

The pure control comes when you don't need to move the arms from its original position in order to contract the *latissimus dorsi* muscles. MC produces a very detailed definition in this body part (if you have a reasonable low body fat, of course). These muscles are the key to the appreciated “V” shape of the back.

A little, but important observation, don't be obsessed with quick body fat decreases. It is much better a steady and graduated weight loss, than a very speedy one. The results are far more healthy and durable. It is unsafe and unrealistic, except in medical controlled patients, to reduce more than 0.5-1 kg per week. It is very risky to lose weight or to do any exercise program without a sufficient intake of water. Drink a lot of

pure water in little amounts every time you can and never use hermetic clothes that induce perspiration. Some practices are absolutely condemnable. For example, running in the hottest hours of summer days dressed with plastic underwear is a madness. Never force your perspiration in any circumstance.

Advanced controls.

Applying FTMCR you can perform a very slow expansion of the *latissimus dorsi*. Much more difficult is the LAMC of this muscles. The tension can be varied slightly from the lowest part, near the *abdominal obliques*, to the middle one, whose isolated contraction tend to activate the *intercostals*. The contraction of the upper part is almost confused with the action to expand the shoulder blades.

10.6.5. Erector spinae

The preliminary exercises have been explained before (Sections 10.1.7 and 10.5).

The control of this muscles are extremely important for back pain relief, improving posture and preventing back injuries during the performance of heavy efforts.

This control is rated as one of the most difficult ones, but once you have achieved it, you have it forever. It is very funny and amazing for most people, because it can be felt easily by direct touching of the lower back.

I have discovered that the keys to pure voluntary control of the *erector spinae* are two.

1. Position. Put your fingers over these muscles with the back straight but relaxed and bend slightly forward and

backwards until you can feel a little contraction. Try to intensify the tension by concentration.

2. Helping action of the central muscle layers of the *rectus abdominis*. This control is very favoured by the LAMC of the *rectus abdominis*. The relaxation of upper sections of the abdomen helps a lot for improving the concentration over the *erector spinae*.

Advanced controls.

The TAMC of the *erector spinae* implies the isolation of each side. This is easy once mastered the main control by turning very slightly the back to the desired side. This control is very favoured by the performance of preliminary exercise of Section 10.5 with only one foot on the floor and the opposite leg straight and forming a parallel angle with respect the back line.

The LAMC of the *erector spinae* is intimately related to the mastery of LAMC relaxing of horizontal abdominal muscle layers.

A very careful inspection of the effect of the forward-backwards angle of bending of the lower back on the level and transference of contraction over the *erector spinae* can be helpful.

The final goal is the combined LAMC + TAMC of each muscle side in a wave alternating form.

Another observation. The speed of performance of the advanced and extreme controls, like this, is irrelevant. The important thing is to perform them correctly. Some maxaldists were able to pulsate their muscles in synchronization with music, like Tony Holland, some others were able to perform incredible

steel-like contractions of any body part for prolonged times, like Alan Mead.

These abilities depend a lot on your preferences, your goals and your anatomy. Any speed of performance is good as far as you effectively isolate the desired muscles.

I personally like the feeling of a steady and continuous transition from contraction to relaxation and vice versa, i.e., I apply FTMCr all times. This technique allows me more powerful contractions without the risk of forcing or vibrating my muscles, it increases my concentration and develops the necessary feelings and methods for achieving extreme high levels of voluntary body-mind relaxation. For this reason I generally train with slow tensing, except for BMC. But this is only a personal choice, you could find more productive and enjoyable to train with quick pulsations trying to synchronize them with your favourite music.

Of course, some contractions of 5-10 breathings each are necessary for developing muscle mass and strength. The exclusive use of quick reflexes is the origin of many unfounded misconceptions and critics about Maxalding, because such quick pulsations have little effect over the muscles.

Due to the large number of MC isolations and their corresponding techniques, I have decided to split them in several articles. In the next one we will explore the control of shoulder and thorax muscles.