

MANUAL RESISTANCE STRENGTH TRAINING



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Manual resistance (MR)

Manual resistance (MR) is a valuable alternative and/or supplement to traditional strength training. Traditional strength training predominantly relies on resistance being supplied by a bar or machine, using a weight stack. With manual resistance training, the resistance is provided by a training partner, or spotter. Thus, one advantage of manual resistance is the lack of need for equipment. The exercises can be performed anywhere, anytime, without having to purchase expensive training equipment. Not using equipment eliminates waiting in line to exercise, and large numbers of people can be trained at one time.

Another advantage of manual resistance is that the muscles can be worked maximally each repetition. An individual's strength decreases as he or she becomes fatigued during a set. By using manual resistance, the spotter can adjust the amount of resistance applied to compensate for the lifter's level of fatigue. The spotter, in conjunction with the lifter, can also control the speed of the movement. This form of training can be an incredibly valuable asset when working with injured athletes. You can work around any injury by providing the resistance at different angles and with different hand positions.

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In order to properly perform manual resistance exercises, several factors must be taken into account. First, manual resistance exercises must be performed with a partner, or spotter. The lifter and the spotter must be able to effectively communicate. Second, the lifter must know how to properly execute the exercise, and finally, the spotter must know how to correctly apply resistance. The effectiveness of manual resistance is dependent on the ability of the spotter to adequately apply resistance.

If the spotter is paired with an individual stronger than him- or herself, there are alternatives the spotter can use to still effectively train the lifter. If an exercise is performed with the upper body, additional resistance, such as books or paperweights, can be held by the lifter. The lifter can allow more time for the raising phase of the exercise (2-4 seconds as opposed to 1-2 seconds). The lowering phase of the movement can be de-emphasized until the lifter has reached an adequate level of fatigue (allow 2 seconds for the lowering phase instead of 4 seconds). Exercises can also be performed one arm or one leg at a time.

As with more traditional forms of resistance training, manual resistance (MR) has its advantages and disadvantages. When properly learned and executed, manual resistance provides an excellent alternative to traditional training.

Manual resistance can also teach athletes how to perform excellent reps with free weights or machines. While it will certainly feel different, when an athlete understands how to properly perform reps using MR, he/she will be able to transfer the technique to more traditional training methods in the weight room.



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Why Perform Manual Resistance?

Learning and utilizing manual resistance exercises are beneficial for the strength and conditioning professional for many reasons including:

1. NO EQUIPMENT NECESSARY.

Equipment and machines within a weight room are very expensive. Many coaches don't have unlimited budgets to buy every piece of equipment possible. Manual resistance is free and can overload just about every muscle in the body.

2. IT CAN BE PERFORMED ANYWHERE.

Manual resistance does not have to be performed inside of a weight room. Strength coaches often share a facility with other coaches or teams, which means space can be very limited. Manual resistance can be done on practice or game fields, inside of a turf bay, or in the weight room. It can also be done on the road if a team is traveling and does not have access to a weight room.

3. ATHLETES CAN LEARN THE METHOD AND PERFORM ON ONE ANOTHER.

Manual resistance can be learned and practiced by just about anybody. You can teach the athletes to be the spotter and they can perform the exercises on each other. You don't need to rely on an entire coaching staff to be present to accomplish a great manual resistance session.

4. GROUPS OF ATHLETES, OF ANY SIZE, CAN TRAIN SIMULTANEOUSLY.

This method of resistance training allows for groups of any and all sizes to train at the same time. Teammates partner up and provide the resistance to each other, without the need to wait for equipment or a coach to take them through the exercise.

5. VARIABLE RESISTANCE ON EVERY REPETITION.

With traditional free weights, when selecting a weight for an exercise, the resistance will always remain the same until the user physically sets it down and selects a new weight. When a user hits volitional failure, the set is over. With manual resistance the spotter can provide more or less resistance on every repetition depending on the needs of the athlete. Volitional failure can be achieved on every set if desired. When an athlete becomes fatigued the spotter simply resists less than the rep before. This prolongs the set which can lead to greater metabolic stress and muscular damage, both of which will influence muscle growth.

One of the biggest disadvantages of MR is that it is difficult to determine if maximal effort is being given so you can never be 100% sure that progress is being made. Many coaches want to see numbers attached to every exercise so that effort can be measured. This is not possible with MR, and it's important to understand this when programming. Strength and size gains can certainly be made with MR, but like all forms of resistance training, effort is certainly necessary.

What to Know Before Performing Manual Resistance

When using manual resistance with an athlete or client, there are certain measures and precautions that need to be taken to ensure both safety and the effectiveness of the exercises:

1. A MINIMUM OF TWO PEOPLE ARE REQUIRED TO PERFORM MANUAL RESISTANCE.

As it is implied in the title, manual resistance must have two people to take place - one acting as the spotter (the resistance) and one acting as the lifter.

2. BOTH THE LIFTER AND THE SPOTTER SHOULD HAVE A COMPLETE UNDERSTANDING OF THE EXERCISE.

Everything from knowing what muscle(s) will be trained, what the lifter's range of motion is, the desired tension provided by the spotter, and the duration of the lifter's eccentric portion of the lift needs to be understood by both parties before beginning.

3. COMMUNICATION IS KEY.

It is vital that the lifter and spotter openly have a plan before attempting a set of manual resistance, and communicate every detail throughout every set. Whether the lifter needs more or less tension, or if it's the spotter counting down the seconds until a concentric or eccentric action is complete, there should be a two-way channel of communication present at all times.



How to Perform Manual Resistance Effectively

When adding manual resistance into your training program there are certain parameters that need to be met by both the lifter and the spotter, as well as individual guidelines, to get the most effective training experience.

General Rules for Manual Resistance

1. **PERFORM SETS WITH THE REP RANGE OF ROUGHLY 6 TO 12.**

Ideally the time under tension for the entire set will be around one minute. This is enough time to effectively achieve the goals of both metabolic stress and muscle damage set forth by manual resistance.

2. **KEEP THE TOTAL NUMBER OF SETS FOR A SINGLE EXERCISE UNDER THREE.**

Manual resistance can be very difficult for lifters of all training ages. Often times, especially for beginners, one set is all that is needed. As you become more advanced as a lifter and have more experience with manual resistance, you can increase the total sets per exercise to 2 or 3. The downside is the spotter can also become fatigued as the total number of sets increases, thus decreasing the effectiveness of the exercise.

3. **ACCENTUATE THE ECCENTRIC PORTION OF THE LIFT.**

Humans are always stronger lowering a weight than lifting it. Because the lifter is roughly 30% stronger eccentrically, apply greater pressure during the lowering phase of each repetition. The lowering (eccentric) phase of each rep should take approximately 4 seconds which can be counted aloud with large groups so everyone can work simultaneously. It's important to have a pre-determined count so the spotter doesn't get tired out before the lifter. If the spotter cannot push the lifter hard enough on the lowering phase, the lifter simply lowers slowly against the spotter. You can have a countdown for the concentric phase of the lift as well, but it is not mandatory. A common goal for the concentric portion is 2-4 seconds.

4. **CONSTANT TENSION (BY THE SPOTTER) AND EFFORT (BY THE LIFTER) EXERTED THROUGHOUT THE ENTIRE MOVEMENT.**

It is imperative that there are no lapses in either tension or effort during the duration of the set. The raising and lowering should be smooth with no hitches or stoppage of effort. This maintains the constant time under tension principle that is crucial for manual resistance to be effective.

Rules for the Spotter

1. RANGE OF MOTION.

Before beginning, find the lifter's range of motion and determine a safe end-point for both the concentric and eccentric phase of the lift. Most of these are demonstrated in the accompanying video, but never push an athlete through a painful range of motion.

2. LEVERAGE.

Find the most advantageous leverage/position to provide a safe, yet effective, resistance for the lifter. Lengthen the lifter's moment arm to achieve a biomechanical advantage in the lift or position your body in a way to take advantage of gravity during the lift.

3. COMMUNICATION.

Communicate the timing of the reps and the total number of reps each and every set. Lead the lifter throughout the entire exercise and BE A COACH. Feedback is critical as the lifter fatigues. Be sure to encourage him/her to always give maximum effort.

4. KNOW HOW MUCH RESISTANCE TO PROVIDE WITH EACH REP.

Do not resist the lifter as hard as you can the first several reps. Let them ease into the set as a warm up, and after 3-4 reps, increase the resistance to make it more difficult. As the exercise progresses know when to back off and provide less resistance, but enough for the lifter to get a proper set done.

5. PROVIDE ENOUGH RESISTANCE TO INDUCE FATIGUE AND STIMULATE STRENGTH GAINS.

As the lifter progresses through manual resistance the spotter can begin to increase the intensity. The lifter will understand their role in the lift and therefore be better equipped to receive the best possible workout through manual resistance.

6. APPLY THE RESISTANCE IN A SMOOTH/CONTROLLED MANNER.

No quick or jerky forces should be applied.

7. VARY THE RESISTANCE DURING EACH REP.

The lifter's leverage and strength curve will change during each rep, so more/less pressure will need to be applied at different angles. As the lifter fatigues, less pressure will be applied to he/she can continue moving.

8. DO NOT APPLY FULL RESISTANCE IN THE STRETCHED POSITION!!!

Doing so could result in injury. Decrease the amount of resistance applied as the muscle approaches the stretched position.

Feedback is critical as the lifter fatigues. Be sure to encourage him/her to always give maximum effort.

Rules for the Lifter

1. **ALWAYS GIVE THE BEST EFFORT POSSIBLE.** The lifter needs to work as hard as possible during manual resistance exercises for them to be most effective. If the spotter says push harder, simply give it your all! For most exercises, the lifter will constantly be trying to lift upward, and the spotter dictates the speed of the movement.
2. **UNDERSTAND THE GOAL OF THE WORKOUT - TO INDUCE FATIGUE.** The lifter should understand this is not a competition and that they will eventually get fatigued during a difficult set. It helps if he/she understand the role of the spotter, so he/she knows what is expected.
3. **PAUSE MOMENTARILY IN THE CONTRACTED POSITION DURING EACH REPETITION.** Pausing momentarily in the contracted position allows maximal development of the muscle at each point during that range of motion. Because the lifter can lower more resistance than he or she can raise, the brief pause allows the spotter to begin applying more resistance during the lowering phase. A good guideline is to hold the contracted position for a count of 1001.
4. **COMMUNICATE THAT YOU UNDERSTAND THE RULES THE SPOTTER SETS FORTH.** Understand the counting of the eccentric and concentric reps and know how many reps will be performed with each set.
5. **COMMUNICATE DURING THE SET.** Tell the spotter when to push harder or easier, and always communicate if something hurts.

It is absolutely critical to have a thorough understanding of the rules and guidelines involved in manual resistance before performing the exercises. While these concepts may seem fairly basic, they lay the foundation for utilizing this training method.



Video Demonstrations

Watch the following video for demonstrations of many manual resistance exercises. Of course, there are other exercises and variations, but pay careful attention to hand placement and how the resistance is being applied.

MR EXERCISE DEMOS – [CLICK HERE](#)

As you can see in the video, many exercises can be performed without equipment using manual resistance. The key is to follow the rules above so that maximum results can be achieved.

If using MR in groups, take the time to thoroughly teach and practice both spotting and lifting. Once athletes understand how to perform MR, you can train large groups anywhere, at any time.

The following video shows West Virginia University Strength & Conditioning Coach Darl Bauer teaching many of these concepts and coaching an athlete through 3 different neck exercises. Darl is also an author in the [IYCA's Principles of Athletic Strength & Conditioning](#) textbook.

DARL BAUER MR NECK VIDEO – [CLICK HERE](#)



Programming Manual Resistance

Manual resistance can be used as a small part of a traditional program or as a stand-alone workout with a team on a field. For example, a traditional upper body program could consist mainly of barbell and dumbbell work and MR could be used for side raises and front/back neck. A lower body program may utilize squats and RDLs with a set of MR Outer Thigh at the end.

When no other equipment is available, a complete MR workout can be done.

A sample program may look like this:

UPPER BODY	LOWER BODY
MR Push Ups	MR Single-leg Squat
MR Lateral Raise	MR Leg Curl
MR Triceps	MR Outer Thigh
MR Row (with towel)	MR Squat
Repeat all of those again	Repeat all four exercises

This program can be done in less than 40 minutes and will induce strength/size gains if done consistently.

Another example would look like this:

1. Push Ups	7. Manual Curl	13. Manual Outer Thigh
2. Manual Row/Chin Ups	8. Manual Triceps Extension	14. Manual Squat
3. Manual Chest Fly	9. 60-second Max Push Ups	15. 1 Leg Toe Raise
4. Manual Pullover	10. Manual Squat	16. 1 Leg Toe Raise
5. Manual Lateral Raise	11. Manual Leg Curl	17. Plank/Core Variation
6. Manual Front Raise	12. Manual Inner Thigh	

Manual Resistance can also be used as a small part of any workout. Here is an example of how you can incorporate just a few MR exercises into more of a complete workout using no equipment:

General Dynamic Warm-up	Single-leg Hip Thrusts 2 x 10 each leg	Pistol Squats 2 x 10 as deep as possible
Split Squat Jumps 3 x 5	Nordic Hamstrings 2 x 6	Single-leg Squat Isometric Hold 0:30 seconds each leg
Squat Jumps 3 x 5	60-second Max Push Ups	MR Side Raise
Pogo Jumps 2 x 20	Inchworms x 3	60-second Max Push Ups
Perfect Stretch	MR Front & Back Neck	Split Squat Jumps 20 each side
MR Push Ups	1:00 Plank while marching the feet	
MR Row	0:30 Side Plank each side	
Lateral Lunges x 10		

Some coaches also like to use just one or two MR exercises as part of a more traditional strength program. For example, you could do a workout that consists of Cleans, Bench Press, Chins Ups, Squats and RDLs followed by MR Front & Back Neck, MR Side Raise and MR Outer Thigh.

Be sure to practice manual resistance until you feel comfortable performing it with athletes. As with all forms of physical activity, there are inherent risks associated with this form of training. Be sure that you are very confident applying these techniques and only perform exercises that cause no pain. Make sure that you or any user has passed a physical or has consulted with a medical professional before engaging in the activity.

MR is an excellent alternative to traditional strength training that allows you to train anywhere and anytime. No equipment is necessary, so all you need is a partner and strength can be developed. It is most often used as an addition to a traditional strength program, but it also very useful on the road or on a field where no equipment is available.

The more you practice MR, the better you will get, so spend some time experimenting with it before you include this method in your training program.

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