BODYWEIGHT STRENGTH TRAINING ANATOMY

Bret Contreras

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BODYWEIGHT

STRENGTH TRAINING ANATOMY

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PREFACE

Because you're reading this book, I think it's safe to say that you're interested in learning how to build strength and fitness through bodyweight training. If so, that's great! You've come to the right place.

Over the past 20 years, I've never taken more than a few days off from strength training. Although I've trained in hundreds of amazing gyms, studios, and facilities, on many occasions I've had to make do with what I had in my house, apartment, or hotel room. When I first started training with weights at the age of 15, I didn't know what I was doing. I remember feeling awkward, uncomfortable, and uncoordinated with many of the exercises. As a matter of fact, I avoided most multijoint exercises because I didn't feel them working the way I felt isolation exercises working. Looking back, I realize that I was a skinny weakling who possessed extremely inferior levels of core stability, single-leg stability, and motor control. I simply wandered around aimlessly without a plan, moving randomly from one exercise to another.

At first, I couldn't perform push-ups so I didn't bother trying them. In fact, I couldn't perform a chin-up, dip, or inverted row, either. I suspect that had I attempted a bodyweight full squat my back would have rounded and my knees would have caved in (the melting-candle syndrome) because my glutes were incredibly weak and I had no knowledge of proper form. It took me five years to be able to perform a bodyweight chin-up and dip.

I've spent the past 20 years learning as much as I can possibly learn about the human body as it pertains to strength and conditioning. Had I known then what I know now, I could have accelerated my results by several years by sticking to a proper exercise progression system and program template. I venture to guess that I could have been performing chin-ups and dips within my first year of training had I possessed a sound understanding of form, exercise progression, and program design. I want to go back in time to help my younger, confused (but determined) self. I wish that the current me could mentor the former me and teach him the ropes.

Flash forward 20 years. I feel great, my joint health is outstanding, my strength levels are highly advanced, and my muscle control is superior. I'm now able to achieve an amazing workout using just my own body weight and simple household furniture. I lean my back on couches in order to work my glutes. I hang on to tables and chairs to work my back and legs. And all I need is the ground to work my chest, shoulders, legs, and core.

I believe that all strength trainees should master their own body weight as a form of resistance before moving on to free weights and other training systems. Bodyweight exercises lay the foundation for future training success, and correct performance requires a precise blend of mobility, stability, and motor control. As you make progress and gain strength, it is possible to continue to push yourself

through bodyweight training so you continue to challenge the muscles and increase your athleticism. But you need to learn the exercises and have a road map to help get you there.

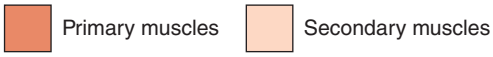
Bodyweight Strength Training Anatomy was written for several categories of people:

- Beginners who need to learn the basics of bodyweight training. Everyone knows about push-ups and squats, but not everyone knows about hip thrusts, RKC planks, and inverted rows. These exercises should be staples of every strength enthusiast's routine.
- Folks who want to be in great shape but don't like attending gyms. If this describes you, then rest assured that you will always be able to receive an amazing workout no matter where you are.
- Fit exercisers who do a lot of traveling. Sure it's nice to have access to hundreds of thousands of dollars of strength training equipment, but if you're frequently on the road then you know that this option is not always feasible.
- All strength training enthusiasts. Regardless of whether you're a weekend warrior, an athlete, a lifter, a coach, a trainer, or a therapist, if your line of work involves fitness then you need to understand bodyweight strength training. Strength training enthusiasts may have specific fitness goals, such as improving functional strength, gaining muscle, losing fat, or improving posture, and bodyweight training will help each of these people achieve those goals.

Here is how I lay out the book. Chapter 1 introduces bodyweight training. Chapters 2 through 9 discuss functional anatomy and its role in sports and aesthetics and lay out the best bodyweight exercises for these muscle groups: arms, neck and shoulders, chest, core, back, thighs, glutes, and calves. In chapter 10, I go over whole-body exercises and explain their purpose. Finally, in chapter 11, the most important chapter of all, I teach you the basics of program design and provide several sample templates for you to follow. *Bodyweight Strength Training Anatomy* features drawings, instructions, and descriptions of approximately 150 exercises for you to reference. As you progress in strength, you'll be able to advance from easier to more difficult exercise variations, and I include a rating system to help you determine the level of difficulty of each exercise.

Unique to *Bodyweight Strength Training Anatomy* are detailed pictures to help you identify the muscle groups and muscle parts that are stressed during an exercise. Research has shown that it is possible to target a particular area of a muscle, but in order to do so it is essential to be aware of the muscle in order

to target that region while training. Primary and secondary muscles featured in each exercise are color coded within the anatomical illustrations that accompany the exercises to help you develop your mind–muscle connection.



After reading *Bodyweight Strength Training Anatomy,* you'll possess a sound understanding of the muscle groups within the human body and will know plenty of exercises that train each movement pattern and muscle. You will know how to properly perform bodyweight exercises that are critical to future improvements. You will understand where to start and how to progress so you can develop proper flexibility and strength to keep advancing over time. You will know the important roles that core stability and gluteal strength play in fundamental movement, and you'll understand how to design effective programs based on your uniqueness and preferences. Finally, you'll dramatically increase your appreciation of bodyweight training, the most convenient form of strength training.

ACKNOWLEDGMENTS

I would like to thank my good friend Brad Schoenfeld. Not only did he recommend me to Human Kinetics, but he also provided much-needed expertise as I worked my way through the publication of my first book. I would also like to thank my family for always being so supportive.

chapter 1

THE BODYWEIGHT CHALLENGE

Numerous books have been written on training with one's body weight. Most include a compendium of exercises common to bodyweight training. However, a large collection of exercises is only part of the package. The results you achieve depend on a variety of factors, and it's important that you perform the best exercise variations and adhere to a well-balanced routine.

Although I've been resistance training for 20 years, I've spent the past decade delving into the world of strength and conditioning. I've learned from the world's best coaches, biomechanists, physical therapists, and researchers. So I speak from experience in stating that when you've been in the game for long enough, you can simply glance at a program and know right away whether the program is efficient and will deliver optimal results.

When it comes to program design, I trust strength coaches over just about anyone. Not only do they have a vested interest in optimizing their athletes' strength, power, and conditioning, but they also must consider the crucial issues of joint health and longevity. As such, their job is to put together sound programs that will ensure progression while preventing dysfunctional adaptations.

PUSHING AND PULLING

It's important to understand that bodyweight training is highly skewed toward pushing over pulling. Because of the wonders of gravity, all it takes to get a great pressing workout is to sink your body toward the ground and then push your body upward. Think of squats, lunges, push-ups, and handstand push-ups. These are great pressing movements that you should definitely be performing. But what about pulling movements? You can't grip the ground and pull yourself anywhere.

Bodyweight pulling exercises require the use of a pull-up bar, suspension system, or sturdy pieces of furniture if the other equipment is unavailable. You can maneuver your body around the furniture in order to strengthen the pulling muscles that provide structural balance to your body and counteract the postural adaptations imposed by the pressing movements.

Nearly all of the at-home bodyweight programs I've seen are in fact slanted toward pressing movements. Although these pressing exercises are highly effective, programs must devote equal attention to exercise order as well as the number

Chin-Up Bars and Suspension Systems

You may find it more comfortable to perform pull-up and row variations from an actual chin-up bar and suspension system instead of a solid and sturdy door, rafter, or table. Consider making your own chin-up bar or inverted row station or purchasing one. These days you can find plenty of models, such as the Iron Gym or the TRX, which you simply install above a doorframe. Doing so will allow you to perform the movements using different grips with more natural movement.

of exercises, sets, and repetitions dedicated to pulling movements. Otherwise structural imbalances result. Quadriceps dominance and knee pain, rounded shoulders and shoulder pain, and anterior (forward) pelvic tilt and lower-back pain are just some of the negative effects that someone could experience after following a poorly designed program.

I took on the challenge of writing this book for two reasons. First, a high-quality bodyweight training book centered on proper exercise selection and balanced program design was sorely needed in the industry. Second, I'm passionate about bodyweight training. I don't believe that anyone else has devoted as much consideration to bodyweight exercises for the muscles on the back of the body. As noted, it's easy to work the muscles on the front of the body with bodyweight training because these are the pushing muscles. But an athletic and fit person requires strong muscles on the back of the body as well, and the bodyweight pulling exercises that work these muscles aren't so straightforward. They require creativity.

THE BODYWEIGHT ADVANTAGE

Many folks absolutely love the prospect of being able to train efficiently in the convenience of their own home. Most fitness enthusiasts have gym memberships and have become highly dependent on machines and free weights to work their muscles. While I'm a huge proponent of using all types of resistance, bodyweight training is without a doubt the most convenient type of resistance. All you need is your own physical being, and you'll never be without equipment or a facility and you'll never need a spotter. In other words, if you learn to use your body as a barbell then you'll always have the ability to obtain a great workout. You can gain tremendous functional fitness in terms of strength, power, balance, and endurance from progressive bodyweight training, and recent research shows that you can enhance your flexibility to the same or even a greater degree through resistance training than from a stretching routine.

I like to watch all types of athletes train. As a strength coach I've watched thousands of athletes lift weights. Two types of athletes have always stood out to me in terms of superior muscular control: gymnasts and bodybuilders. In awe, I watch the gymnast on the rings or the pommel horse maneuvering his body

around the apparatus with precision. I watch the bodybuilder contract his or her muscles against the resistance with total concentration. When training with body weight, you want to learn from these athletes and develop a tremendous mind–muscle connection, which will allow you to achieve an amazing workout anywhere you go.

In this book I will teach you the best bodyweight exercises and show you the most effective way to combine them into cohesive programs consistent with your fitness goals. You will learn how to progress from the simplest variations to the most complicated and advanced bodyweight exercises. You will learn to use your abdominals and gluteals to lock your torso into position and create a stiff pillar of support while you move your limbs. You will become lean, limber, and athletic. Push-ups and pull-ups won't intimidate you. Your glutes will function like never before, and the confidence you gain from this program will shine through in every aspect of your life.

You will never fear having subpar training sessions when you go on vacation because you'll be able to perform an effective workout from the comfort of your hotel room. You'll realize that you don't need barbells, dumbbells, or elastic resistance bands. With sound knowledge of the biomechanics of bodyweight training, you can learn to create just as much force in the muscles as if performing heavy resistance training.

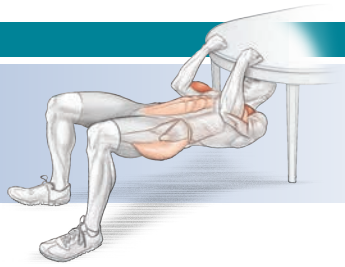
Better yet, you'll save thousands on gym membership fees without compromising the quality of your workout. You can use these savings to make healthier food choices so you can realize even better results from your training. All in the comfort of your own home!

I was recently asked whether or not I believed that I could maintain my muscularity and fitness solely by performing bodyweight exercises. Without hesitation I answered, "Yes." As you progress to more difficult variations and increase the number of repetitions you perform with the various exercises, you

Safety First!

Although I will teach you how to perform many exercises using standard furniture, I don't want you to get injured if a chair slides or a door comes off its hinges. Remember that standard fitness equipment such as chin-up bars and weight benches are viable options as well. If you do choose to use furniture, I emphatically remind you that every piece of furniture you use when training must be secure, stable, and strong. Placing the furniture against a wall or on top of a sturdy rug will prevent it from sliding around. Wedging a book beneath an open door will provide extra support. If there is a risk you might slip and fall, perform the exercise over a soft surface such as carpeting or turf. Test the safety of your setup with one or two repetitions before beginning your full workout. If a particular setup seems unbalanced or insecure, switch to a different exercise or explore a safer alternative.

will continuously challenge your neuromuscular system. Your body will respond by synthesizing more protein and laying down more muscle tissue. In essence, your body adapts by building a bigger engine. Recent studies have shown that high repetitions can provide a potent muscle-building stimulus, more so than most experts imagined. I'm glad you've decided to take the bodyweight challenge and learn how to manipulate your body to achieve a world-class workout. I'm glad that you've decided to no longer be a slave to the gym. Now the world is your gym and you are the resistance.



chapter 2

ARMS

Talk to any teenage boy who is new to strength training and chances are the first thing he'll ask you about is arm training. Among men, well-developed biceps and triceps are likely the most coveted muscles in the body. This makes perfect sense. They're the least covered major muscles of the body. Shirts, pants, shorts, and socks conceal most of the torso and legs, but usually the arms are right out in the open in plain view for everyone to see.

You'll be hard-pressed to find muscles that are flexed more often in bathrooms across the world than the arms, because at any given point probably thousands of guys are striking double biceps poses in front of their mirrors. When you have string bean arms, you'll do just about anything to fill out your shirtsleeves with a muscular set of guns. While the biceps seem to get all the glory, the appearance of the arms requires proper development of the triceps on the back of the arms as well.

Arm exercises aren't just for men. They're important for women, too. First lady Michelle Obama created a media buzz with her muscular, toned arms. Talk to a soon-to-be bride or bridesmaid who will sport a strapless dress and she'll let you know how much she covets well-defined arm muscles. Many women are insecure about the appearance of their triceps in particular and seek to firm the area by increasing muscle development through triceps-strengthening exercises.

MUSCLES OF THE ARMS

To better understand how to best target the arm musculature, let's first delve into basic anatomy. On the front of the upper arms, you have the elbow flexors. Elbow flexion is moving the wrist toward the shoulder by bending the arm. The primary elbow flexors are the biceps brachii, which are actually composed of two heads, a long head and a short head (figure 2.1). Other elbow flexors you should know about are the brachialis and brachioradialis. These muscles contribute to movement in varying degrees depending on how the elbow flexion exercise is performed. In general, the biceps brachii is worked most with a supinated (palms-up) grip, the brachioradialis with a neutral grip (palms facing each other), and the brachialis with a pronated (palms-down) grip. This is because of the leverage of each muscle at various positions and ranges of motions.

The back of the upper arm is composed of the elbow extensors. Elbow extension is moving the wrist away from the shoulder by straightening the arm to form a solid line from shoulder to wrist. The primary elbow extensors consist of the

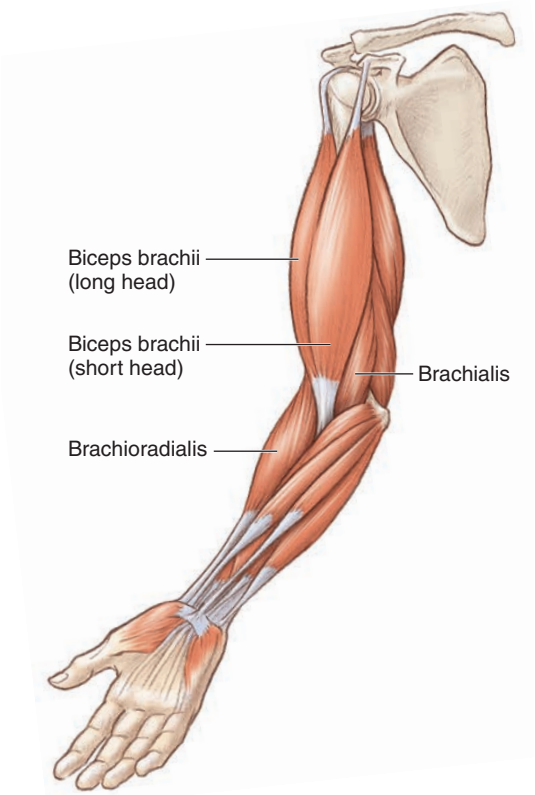


Figure 2.1 Biceps brachii, brachialis, and brachioradialis.

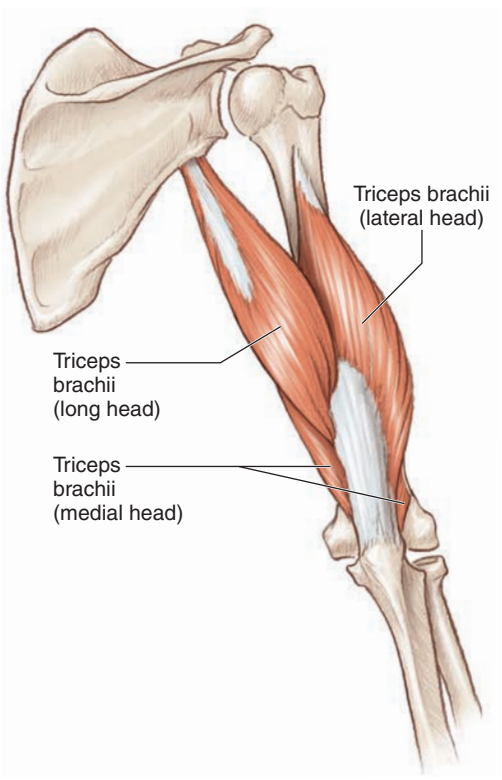


Figure 2.2 Triceps brachii.

three individual heads of the triceps brachii—the long head, medial head, and lateral head (figure 2.2).

The arms are important in various athletic pursuits. The elbow extensors contract forcefully when swinging a baseball bat or golf club, when stiff-arming or pushing an opponent forward in American football, when going for a spike in volleyball, or when throwing a ball overhead in baseball or American football. These muscles are heavily involved in throwing a chest pass in basketball or a jab or right cross in boxing or heaving a shot put in track and field.

The elbow flexors transfer energy when swinging a racket in tennis or a hook in boxing. They're relied on when clinching or attempting or avoiding arm-bar submissions in mixed martial arts, when tackling an opponent in American football, and when pulling the body up in rock climbing. In addition, they're involved in carrying heavy objects out in front of the body in strongman events and in the sport of rowing.

EXERCISING THE ARMS

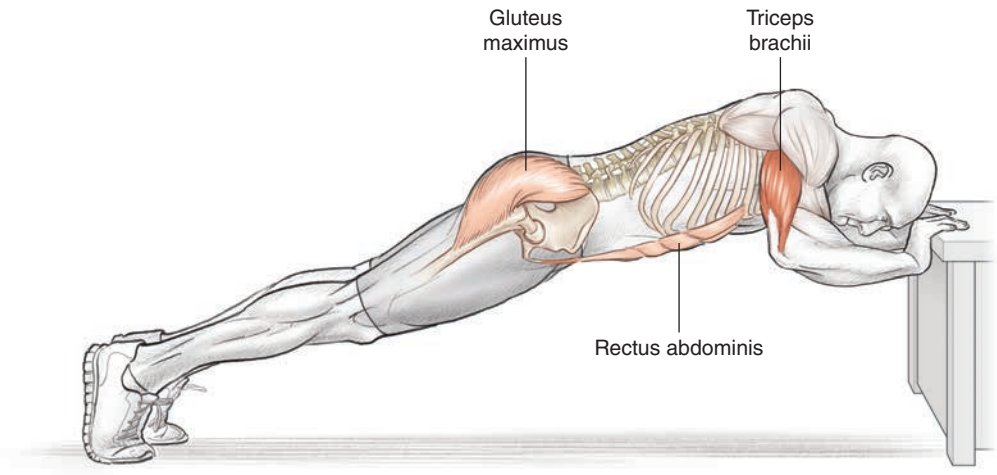
The arms are worked heavily during upper-body exercises that involve the movement of two or more joints at a time. All types of pull-up and rowing motions will sufficiently work the elbow flexors, and all types of push-up and dipping motions will sufficiently work the elbow extensors. For this reason, every time you train your chest, shoulders, and back you'll necessarily be working your arms.

The involvement of the arm musculature during multijoint movements is particularly important from a bodyweight training perspective. It's easy to isolate the arm muscles when using free weights or cables. Simply grab a weighted implement and flex or extend the elbows. Things become more complicated, however, when trying to use your body as a barbell. It's difficult to manipulate the body around the elbow joints. This isn't to say that it's not a good idea to try to target the arms with single-joint movements. But it is critical to understand that multijoint movements are the most productive in terms of total muscular output.

When performing arm exercises, concentrate on squeezing the intended muscles and don't allow other muscles to do the job. Before heavy sets of elbow flexion exercises, Arnold Schwarzenegger used to envision his biceps growing as big as mountains. Focus on feeling the arm muscles contracting in order to create the desired movement. Bodybuilders call this a mind–muscle connection, and it takes time to sufficiently develop these neuromuscular pathways. Training for sport and functional purposes is more about training movements; whereas training for physique and aesthetic purposes is more about training muscles. For this reason, think about arm training as contracting your muscles against resistance. This will help you put maximal stress on the intended muscles.

Although the forearms are indeed part of the arms, they will be worked during gripping movements, including pull-ups and rowing motions, while training the back musculature. (See chapter 6.)

TRICEPS EXTENSION



Safety Tip Choose a stable, sturdy table, or chair.

Execution

1. Place your hands on the corner of a table or seat of a chair and back into proper position.
2. Keeping your body in a straight line with straight legs, straight arms, weight on the toes, and the abdominals and glutes braced, lower your body by bending the elbows.
3. Raise the body by using the triceps to extend the elbows.

Muscles Involved

Primary: Triceps brachii

Secondary: Rectus abdominis, gluteus maximus

Exercise Notes

The triceps extension is one of the rare exercises that truly targets the triceps musculature. This is because the body revolves around the elbow joint with nearly pure elbow extension. Get into a strong position by planting firmly into the ground and squeezing the abdominals and glutes to maintain a solid straight

line from head to toe. Do not lose this position during the exercise. Losing this position by sagging at the hips is not only unathletic but is also potentially harmful to the low back. Don't allow the shoulder joint to move much and try to keep most of the movement around the elbows. Use the triceps musculature to raise and lower the body.

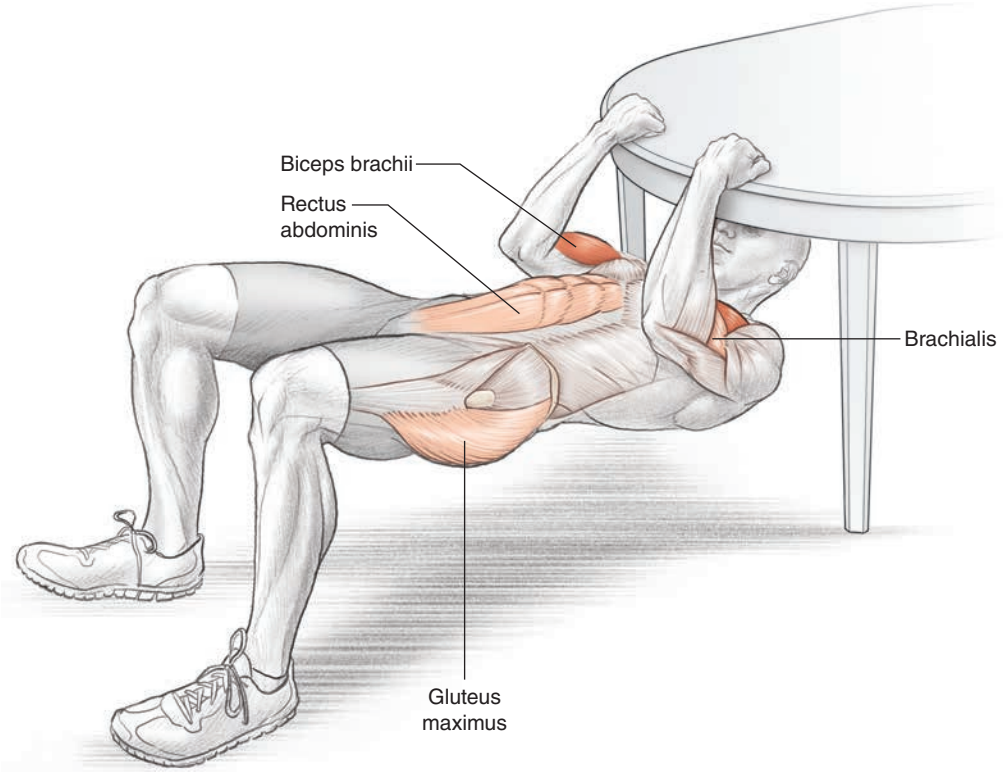
You can modulate the difficulty of this exercise by adjusting the chair or table height. To make the exercise easier, use a taller chair or table. Conversely, to make the exercise more difficult, use a shorter chair or table.

VARIATION

Short-Lever Triceps Extension

People who find this movement challenging may shorten the lever by performing the movement from the knees, thereby reducing the total percentage of body weight being lifted. Use a sturdy chair or coffee table for this exercise; a standard table is too high.

SHORT-LEVER INVERTED CURL



Safety Tip Choose a sturdy table or chair. Perform the exercise over a soft surface such as carpeting.

Execution

1. Lying on your back, set up under a sturdy table or tall chair with your hands grasping the outer edges, palms facing each other.
2. With your torso and legs in a straight line, neck in neutral position, knees bent at 90 degrees, weight on the heels, and the abdominals and glutes braced, raise your body by bending the elbows. (When the neck is in neutral position, the head and neck remain in their natural positions and are not tilted up or back.)
3. Lower to starting position under control, moving mostly at the elbows and not the shoulders.

Muscles Involved

Primary: Biceps brachii

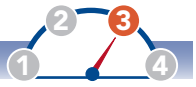
Secondary: Brachialis, rectus abdominis, gluteus maximus

Exercise Notes

The short-lever inverted curl is one of the only pure biceps exercises. Most of the other biceps movements heavily involve the muscles of the back. Make sure you squeeze the core muscles including the glutes in order to keep your torso and legs in a straight line. This maintains core stability while moving the body around the elbow joint to target the biceps muscles.

This exercise can be adjusted to accommodate various levels of strength by using a taller table or chair to make the exercise easier, or a shorter table or chair to make the exercise more challenging. Depending on the type of chair or table, you might not be able to use a full range of motion if your head comes into contact with the bottom of the furniture. In this case, simply perform an isohold by holding the top position for a certain amount of time or perform a shorter-range pumping motion. Alternatively, grip both ends of a towel wedged into the top of a door. Use a neutral grip, which works the brachialis and brachioradialis a bit more than the biceps.

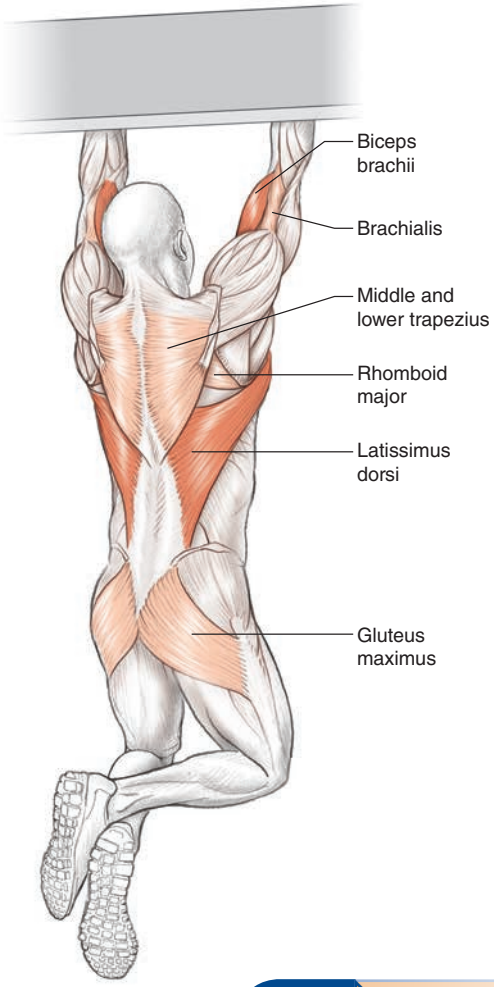
VARIATION



Long-Lever Inverted Curl

People who find this movement to be easy may lengthen the lever by performing the movement with straight legs that are elevated on to another chair or bench, thereby increasing the total percentage of body weight being lifted.

BICEPS CHIN-UP



Safety Tip Use a secure rafter or chin-up bar.

Execution

1. Begin in a full-stretch position, hanging from a secure rafter or a chin-up bar with straight arms and a supinated grip, palms facing you. The toes will be off the ground and the knees can be bent if that's more comfortable.
2. Pull the body over the rafter or chin-up bar to sternum height while keeping the core stable.
3. Lower the body under control making sure you come all the way down.

Muscles Involved

Primary: Biceps brachii, latissimus dorsi

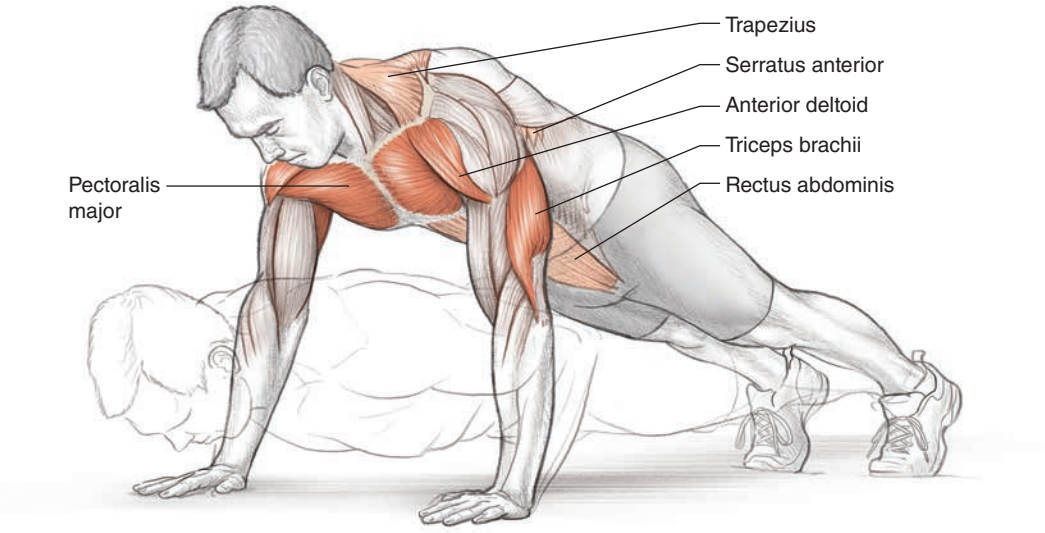
Secondary: Brachialis, lower and middle trapezius, rhomboids, rectus abdominis, gluteus maximus

Exercise Notes

The chin-up is a classic bodyweight exercise for the biceps and back muscles. A supinated grip with the palms facing you works the biceps the best, which is why this variation is included in the arms chapter. This movement requires a rafter or bar you can hang from with a supinated grip.

Many people perform this movement incorrectly by failing to use a full range of motion at the top and bottom of the movement, kicking their legs and using momentum, overarching their low back, and shrugging their shoulders at the top of the movement. Keep your core stable and your body in a straight line from the shoulders to the knees with a strong core and glute contraction. When at the very top of the movement with the chin over the bar, imagine tucking the shoulder blades into the back pockets so you keep them back and down. Use a full range of motion by starting from a dead stop position and rising all the way to where the rafter touches the top of your chest. If you perform chin-ups in this manner, you'll receive a very effective core workout in addition to a challenging upper-body workout.

NARROW TRICEPS PUSH-UP



Execution

1. Lie face down with the hands positioned shoulder-width apart and the elbows tucked into the body.
2. With the feet together and the core stable, press the body up.
3. Lower the body until the chest touches the floor.

Muscles Involved

Primary: Triceps brachii, pectoralis major, anterior deltoid

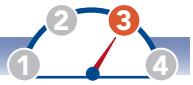
Secondary: Upper and lower trapezius, serratus anterior, rectus abdominis, gluteus maximus

Exercise Notes

The push-up performed with a narrow base is a classic exercise that targets the triceps and pectorals. No doubt it's extremely effective; however, most people perform this movement incorrectly by sagging at the hips, looking up and over-extending the neck, stopping short and failing to use a full range of motion, or failing to center their elbows over the wrists. Keep a strong core by flexing the abdominals and glutes. Keep the body in a straight line throughout the exercise and do not allow the hips to sag. Lower your body until the chest hits the floor.

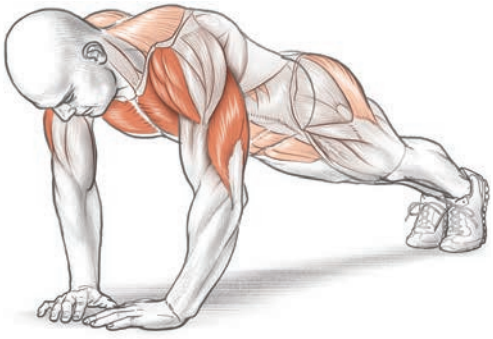
Look down during the set and make sure the elbows are in line with the wrists. Keeping your body locked into a powerful position ensures that you receive a good core workout in addition to an effective upper-body workout.

VARIATION



Diamond Triceps Push-Up

The diamond triceps push-up is a bit more challenging than the narrow triceps push-up because it relies more heavily on the triceps. This variation is performed with the hands touching each other and forming a diamond shape with the thumbs and index fingers.

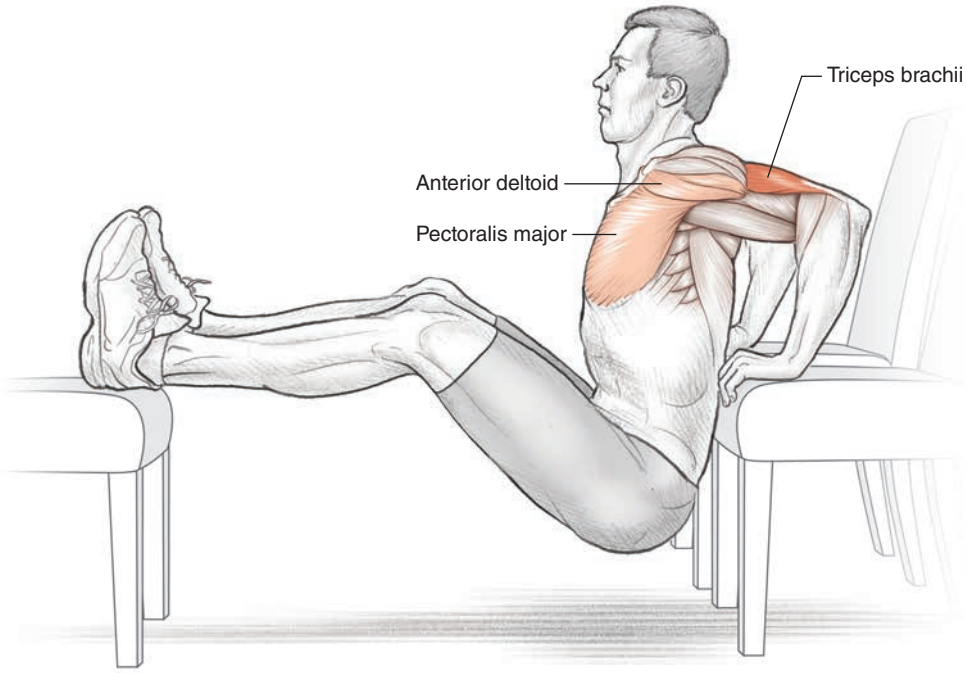


VARIATION

Short-Lever Triceps Push-Up

People who struggle with regular narrow triceps push-ups may shorten the lever by performing the movement from the knees. This reduces the total percentage of body weight being hoisted and allows for stricter form to be used.

THREE-POINT BENCH DIP



Safety Tip Use sturdy, stable chairs or weight benches.

Execution

1. Set up three chairs so that your feet are resting on one and your body is centered between the other two. (If you have access to weight benches, you can perform this exercise using two weight benches. Set the benches parallel to each other. Place your palms on one bench and your heels on the other so your body is perpendicular to the benches.)
2. With your palms on the end of the two chairs, fingers forward, and your torso upright and legs in a straight line, lower the body under control until you receive an adequate stretch. Don't go too low; this could be dangerous. Upper arms parallel to the floor is deep enough.
3. Push your body up back to starting position.

Muscles Involved

Primary: Triceps brachii

Secondary: Pectoralis major, anterior deltoid

Exercise Notes

The bench dip is a common movement performed at gyms across the world. It's an effective triceps builder and can easily be adjusted depending on your strength level. Make the exercise easier by performing the movement with the feet flat on the floor and knees bent, which reduces the total amount of body weight being lifted. Descend deep enough to receive a good stretch in the muscles, but don't go too deep and place your soft tissue at risk. If you regularly descend too deeply, you risk injuring certain structures surrounding the shoulder joint. This exercise can be dangerous if not performed properly. Keep a tall chest during this movement and don't allow the lower back to round. Make sure you rise all the way to lockout.

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chapter 3

NECK AND SHOULDERS

Envision a strong, powerful man and he'll undoubtedly have a set of muscular shoulders and a thick neck. You'll never see a strong guy with wimpy shoulders or a puny neck. Moreover, thick shoulders create the illusion of a smaller waist, producing the coveted V taper. Although the latissimus dorsi (lats) are critical in creating this X factor, the top of the X actually starts with the deltoids (delts). The X factor is the coveted look men try to achieve. In order to achieve the X factor, a man needs strong upper-body musculature, a narrow midsection, and strong and muscular hips and thighs. The V taper, from the deltoids to the narrow midsection, characterizes a fit and athletic man.

Women often seek the defined and toned delts that signify a strong upper body, one built through hard work and effort. For many people, the shoulders can be stubbornly unresponsive to training, thereby requiring much devotion. To properly address the spectrum of shoulder and neck training, it's important that you understand the many functions of these muscles.

NECK

The neck is important in many sports. Collision sports such as American football, boxing, and rugby require strong necks to absorb strikes and prevent concussions or neck injuries. Grappling sports such as wrestling and Brazilian jiu-jitsu also require strong necks in order to prevent submissions and neck injuries.

Although the neck can move through all sorts of actions such as flexion, extension, lateral flexion, rotation, protraction, and retraction, we will focus primarily on strengthening the neck musculature isometrically during its forward (flexion) and backward (extension) motions. This will lead to a strong and stable neck, which is an overlooked aspect of spinal stability. Because these motions strengthen the various fibers of the trapezius and sternocleidomastoid, the scalenes, and the levator scapulae, the muscles responsible for other neck motions such as rotation and lateral flexion, you will cover all bases by performing these two movements.

Many assume that the only way to work the upper trapezius (figure 3.1) is through shrugging exercises that require scapular elevation. This is incorrect. The upper traps are heavily involved in upward rotation of the scapula and therefore get hit hard during handstand push-up motions. The same goes for the lower traps. In fact, you can adequately develop the fibers of the trapezius muscles by performing a balance of the horizontal and vertical pressing and pulling motions included in this book.

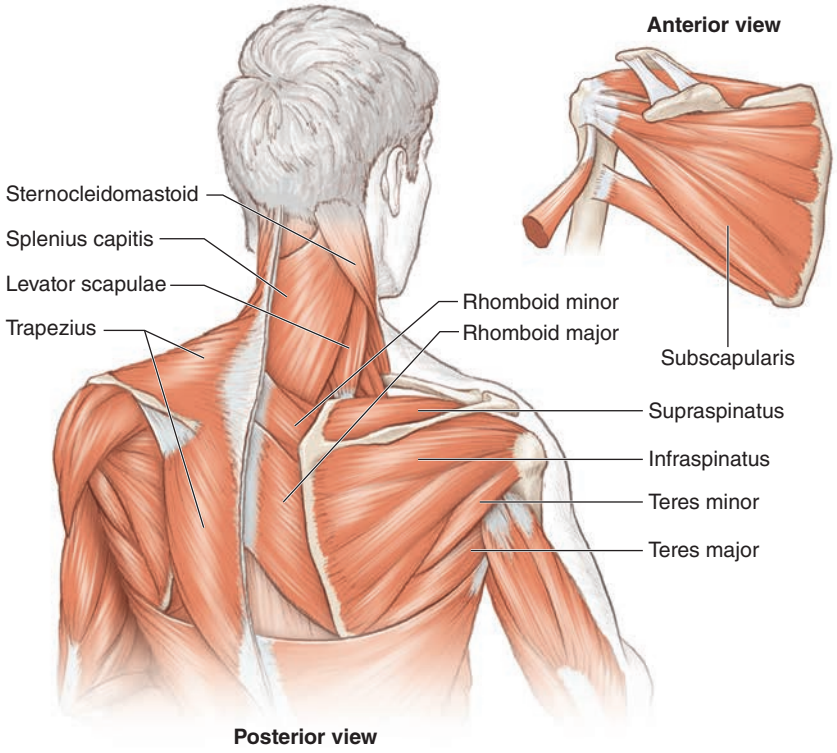


Figure 3.1 Neck and upper-back muscles.

Overhead pressing is complex in terms of biomechanics. Proper overhead pressing motions require adequate strength and mobility of the shoulder, upper back, and upper arm. When people work at a desk and sit for much of the day slumped over computers, posture erodes, which compromises lifting mechanics. For this reason beginners should stretch the upper body and progress gradually through the exercises to ensure that shoulder mobility and stability are developed in tandem. In particular, the upper spine should be able to extend and rotate properly and the shoulders should possess adequate mobility in all directions. Balanced strength and flexibility across the upper-body joints will keep the shoulders healthy and functioning properly throughout a lifetime.

SHOULDERS

The deltoids (figure 3.2) are important stabilizers of the glenohumeral joint and need to be strong and coordinated for rapid movement and for the prevention of shoulder dislocations. The deltoids contain three heads, each having a different function. When you get lean enough, you'll be able to see the three heads contracting while you train.

A well-developed middle head, or lateral deltoid, is the subdivision of the delts that leads to the illusion of the wide X shape mentioned earlier. The anterior head is on the front of the body, and posterior head is located on the back of

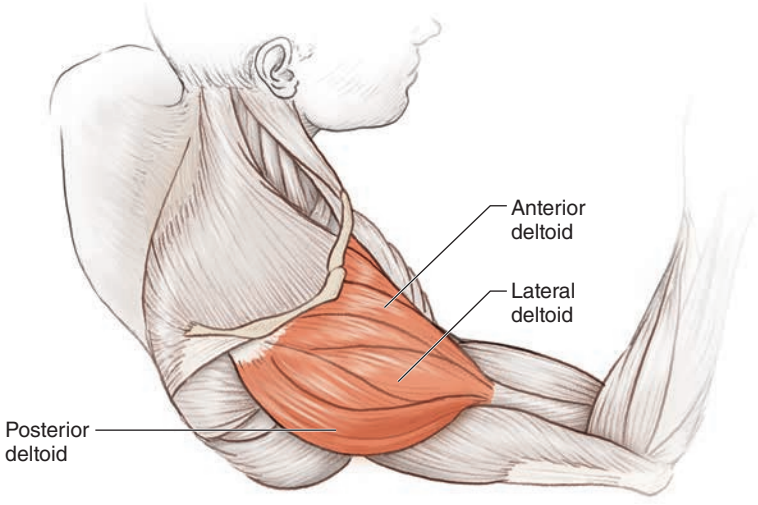


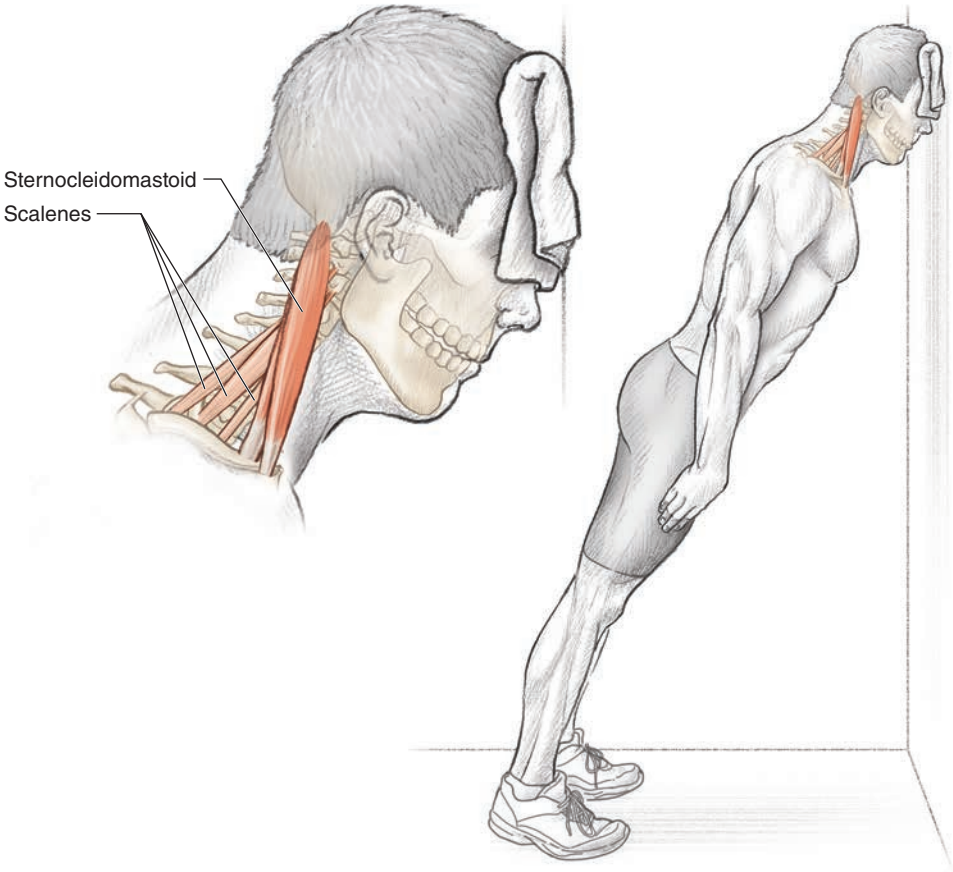
Figure 3.2 Deltoids.

the body. The anterior head is worked during push-up variations because it is a strong shoulder flexor and transverse, or horizontal, adductor. (Adduction moves a limb toward the midline of the body, and abduction moves a limb away from the midline of the body.) The posterior head is worked during various rowing and pull-up exercises because it acts as a shoulder extensor and transverse, or horizontal, abductor. However, this head is often underdeveloped. Specific attention to the rear delts is usually provided through transverse abduction movements of the shoulder. While all three heads contribute to handstand push-up movements, the anterior and lateral heads are worked the most during this category of lifts. The posterior head keeps the shoulder stable and contributes slightly to the overall motion.

Even if you were never to target your deltoids, you could achieve pretty good development by performing horizontal pressing and pulling movements such as push-ups and inverted rows. But to take your delt development to the next level, it is imperative to work them directly. There seemed to be fewer shoulder injuries many years ago when overhead pressing was more popular than horizontal pressing. This practice led to more stable shoulder muscles and balanced strength levels.

It should come as no surprise that the deltoids are heavily involved in sporting movements. They're involved in throwing jabs and crosses in boxing, chest passes in basketball, and pushing an opponent forward or stiff-arming an opponent in American football. In fact, the shoulders are heavily involved in all throwing, swinging, and striking motions predominant in sports such as baseball, tennis, racquetball, swimming, volleyball, and martial arts. The posterior deltoid is highly involved in the backhand stroke in tennis, a spinning backfist strike in mixed martial arts, rowing, or even a Frisbee serve. When carrying heavy loads at the sides of the body, the deltoids contract forcefully to keep the loads away from the body and prevent the humerus, the upper-arm bone, from pulling out of its socket.

WALL ANTERIOR NECK ISOHOLD



Execution

1. Place a folded towel on the forehead.
2. From a standing position with arms at the sides, lean against the wall, making sure to keep the body in a straight line.
3. Hold for the desired amount of time.

Muscles Involved

Primary: Sternocleidomastoid

Secondary: Scalenes

Exercise Notes

The wall anterior neck isohold is an important exercise for proper neck muscle development. In collision and combat sports these muscles need to be strong because they're responsible for preventing neck hyperextension, which can occur during collisions or strikes if the muscles aren't sufficiently developed.

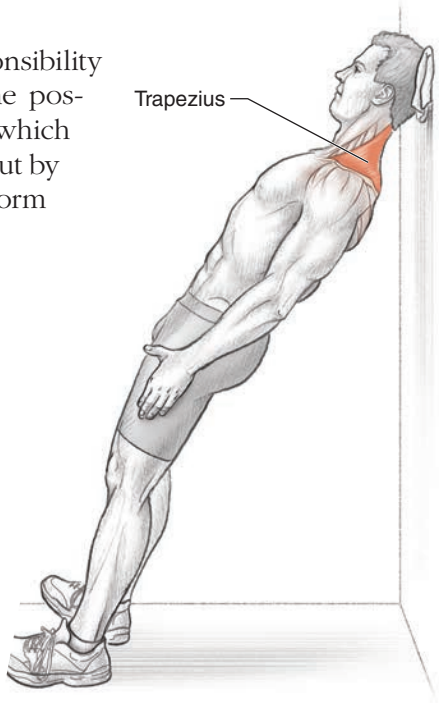
The difficulty of this exercise can be adjusted by moving up or down the wall. The farther up on the wall and the closer you stand to the wall, the easier it is, and the farther down on the wall and farther away you stand from the wall, the more challenging the exercise. I prefer to perform a 30-second hold, but you can opt for shorter or longer times depending on your goals.

Use a thick folded towel to cushion your head when you perform this movement. Keep your body in a straight line with a strong core and glute contraction.

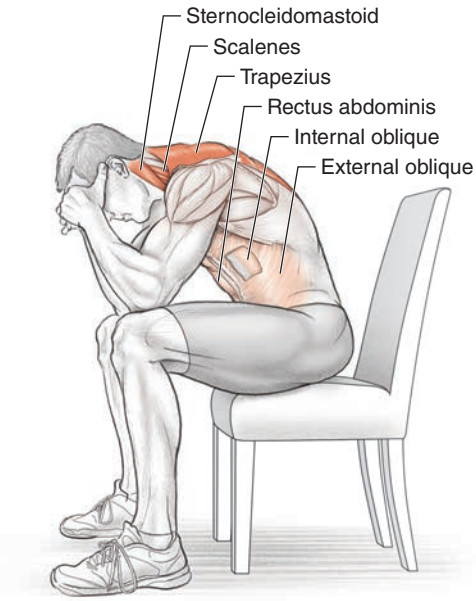
VARIATION

Wall Posterior Neck Isohold

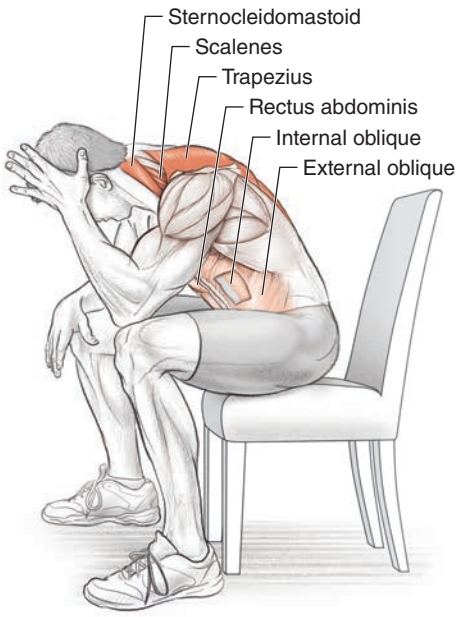
The posterior neck isohold shifts the responsibility from the anterior neck musculature to the posterior neck musculature. This movement, which involves a neck extension hold, is carried out by the trapezius and cervical extensors. Perform this exercise for balanced neck strength.



MANUAL NECK ISOHOLD



Front.



Side.

Execution

1. From a seated position with the elbows braced on the thighs, place the hands on the front of the head and apply manual (self-produced) isometric resistance for 10 seconds.
2. Place the hands on the back of the head and hold for another 10 seconds while applying manual resistance. If your arms are relatively short you may find that you have trouble keeping the elbows on the thighs for this variation.
3. Finish with a lateral isohold on each side (right and left) by placing the hand on the side of the head and applying manual resistance for 10 seconds.

Muscles Involved

Primary: Sternocleidomastoid, scalenes, trapezius, cervical extensors such as the semispinalis capitis and splenius capitis

Secondary: Rectus abdominis, internal and external obliques, erector spinae (spinalis, longissimus, iliocostalis)

Exercise Notes

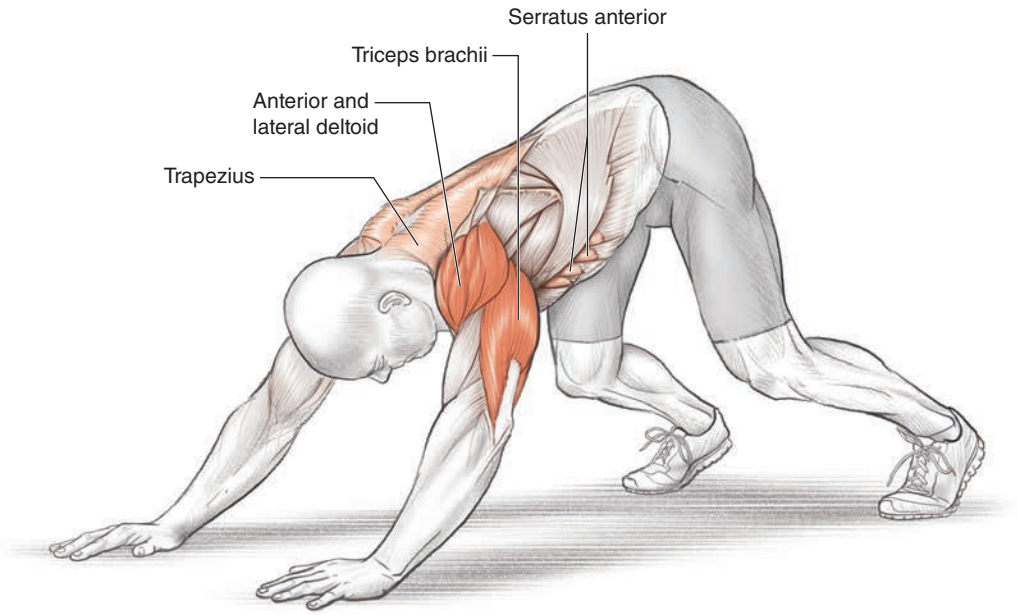
Manual neck exercises are excellent for strengthening the neck musculature. Studies show that in order to strengthen the neck you have to train it directly. The neck muscles will not reach their maximum potential unless you perform specific neck exercises, and the good news is that it's very easy to train the neck through isometric holds.

Keep the neck in neutral position while you perform the holds. In neutral position, the neck is in its normal position, not twisted or tilted forward, backward, or to the side. Perform four holds: one for flexion, one for extension, one for right lateral flexion, and one for left lateral flexion.

A strong neck is important because it more securely connects the head to the torso, which reduces the risk of concussions.

PUSH-BACK

Starting position.



Execution

1. Stand with feet wider than hip width and set up as you would in the bottom of a push-up position, but keep your hips up.
2. Push up and back while crouching at the hips, keeping the hips higher than the shoulders.
3. Return to starting position. The eccentric component, or the lifting part of the movement, when the muscles are shortening should be an exact reverse of the concentric component, or the lowering part of the movement, when the muscles are lengthening.

Muscles Involved

Primary: Anterior deltoid, lateral deltoid, upper pectoralis major, triceps brachii

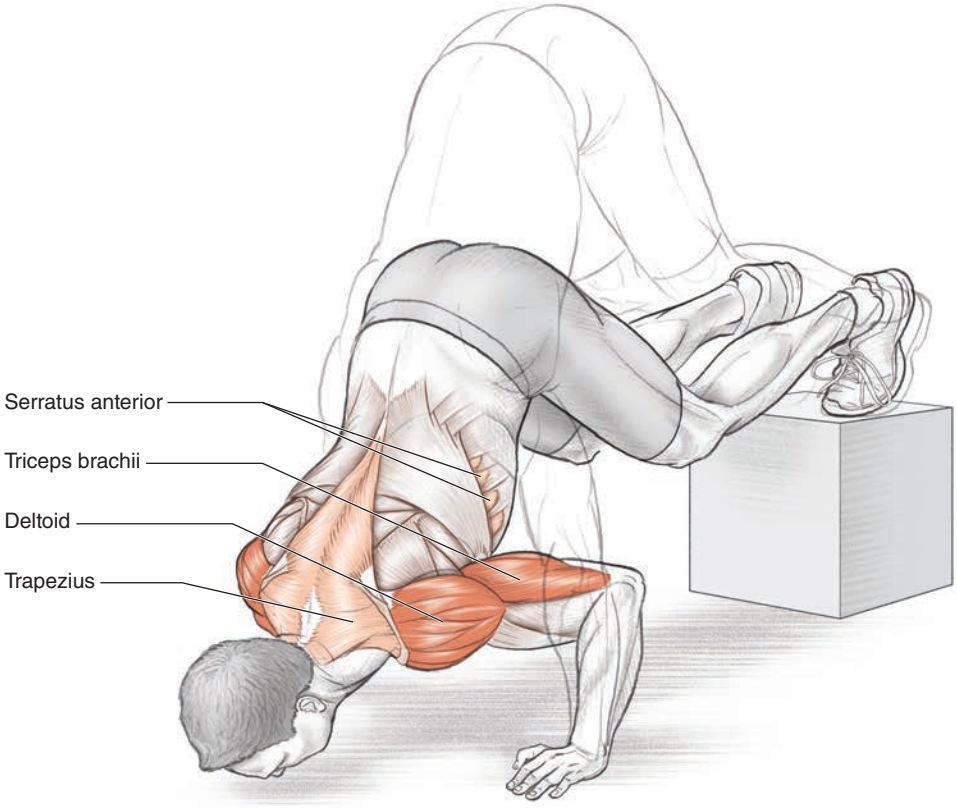
Secondary: Upper and lower trapezius, serratus anterior, middle and lower pectoralis major

Exercise Notes

The push-back exercise is a mix between a push-up and a pike push-up. The goal is to try to make a push-up feel like a handstand push-up by manipulating the direction of force into the ground. By pushing the body backward, you focus more on the shoulder musculature than the pec musculature.

Keep the hips high and feel the movement working the deltoids. Look down and avoid hyperextending the neck during the movement.

FEET-ELEVATED PIKE PUSH-UP



Safety Tip Use a very sturdy chair.

Execution

1. Place your hands on the floor just wider than shoulder width and your feet on top of a sturdy chair, box, or weight bench.
2. Pike up into an L-position by walking your hands back while flexing the hips and raising your buttocks toward the ceiling, then lower your body toward the floor by bending your elbows.
3. When your head reaches the ground, reverse the motion to starting pike position by locking out the arms and pushing the body high and away from the floor.

Muscles Involved

Primary: Deltoids, triceps brachii

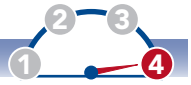
Secondary: Upper and lower trapezius, serratus anterior

Exercise Notes

The feet-elevated pike push-up is an effective shoulder builder. Many people aren't quite strong enough to perform handstand push-ups, and the pike push-up is an excellent intermediate exercise in the progression to more challenging variations.

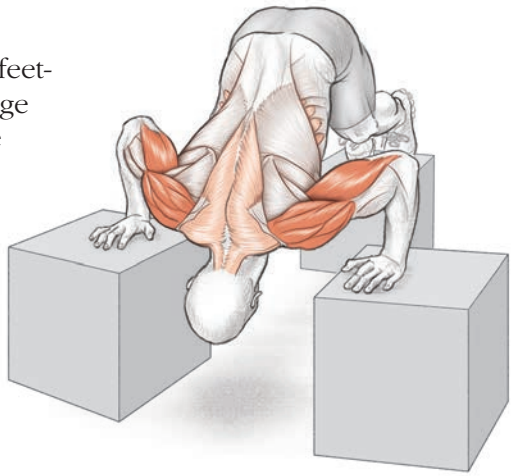
There is no need to hyperextend the neck in order to descend lower because the pike push-up is a partial-range movement no matter how you slice it. Keep your head and neck in neutral position and lower the body until the head touches the floor. Keep the body in an L-position throughout the movement.

VARIATION

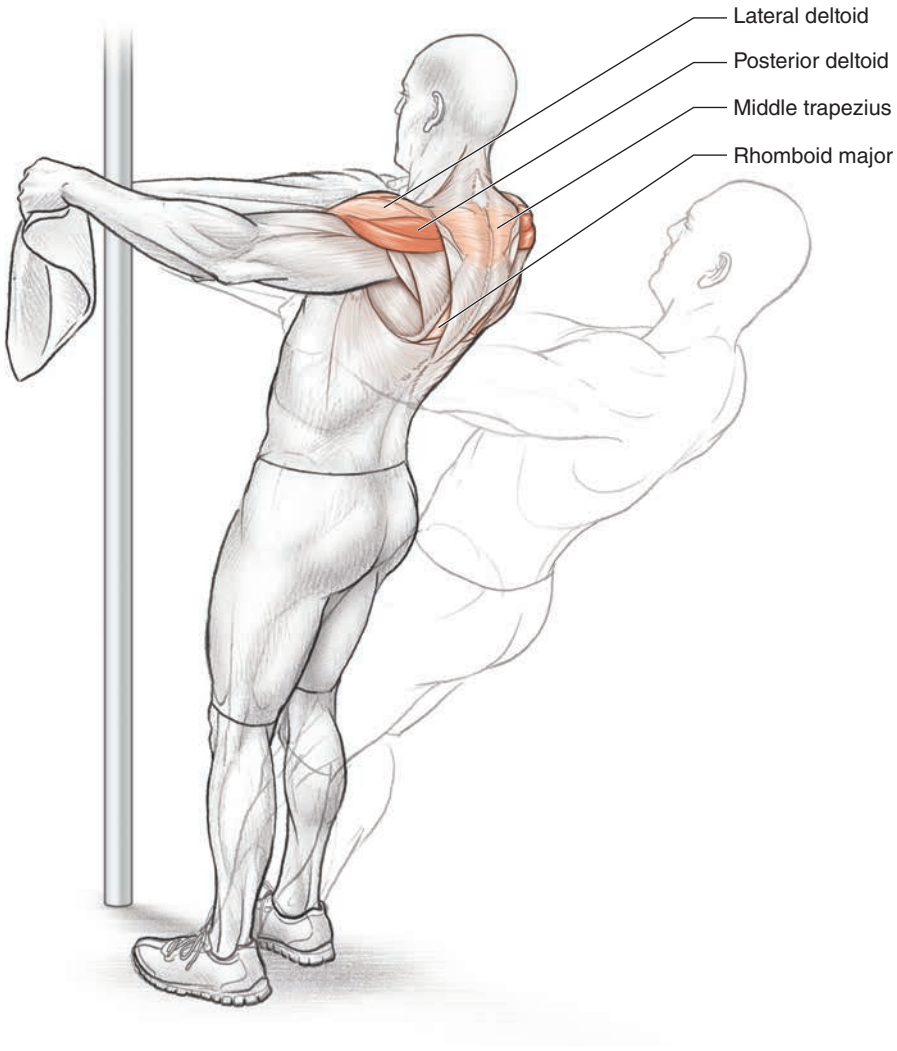


Three-Point Pike Push-Up

Once you become proficient in the feet-elevated pike push-up, increase the range of motion by performing the exercise between two sturdy, immobile chairs or boxes. This allows the head to travel farther down, placing more stress on the shoulder muscles and creating a more effective movement. The rear chair should be taller than the two front chairs.



REAR DELTOID RAISE



Execution

1. From a standing position with a towel wrapped around a pole, grab the ends of the towel and lean back into position.
2. Keeping the body in a straight line, raise your body by bringing the arms out to the sides.
3. Control the descent back to starting position.

Muscles Involved

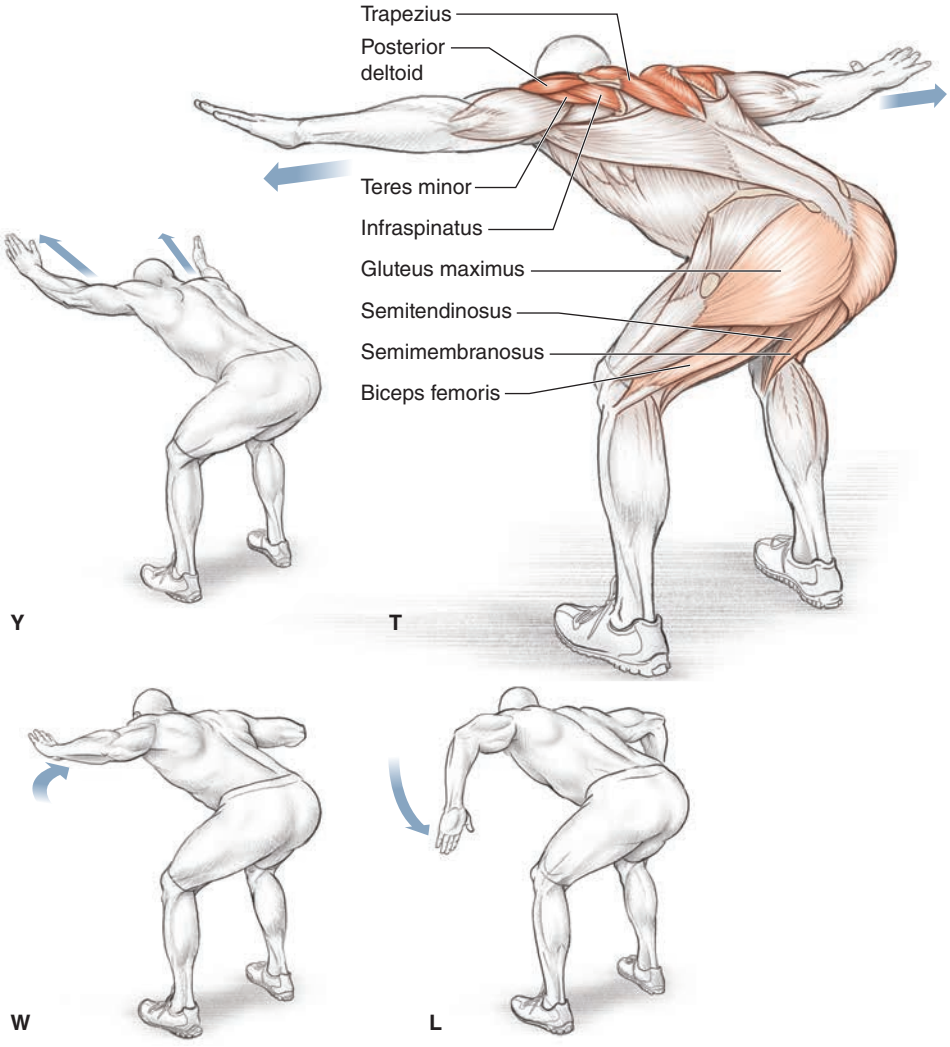
Primary: Posterior deltoid

Secondary: Lateral deltoid, middle trapezius, rhomboid major

Exercise Notes

This move is easiest when you have a large towel and access to a pole. However, you have other options. You may also drape the end of a large towel over the top of a sturdy door and then shut the door, thereby wedging the towel into place. If the towel is wide enough, one will suffice, but two towels can be used as well. Keep your body in a straight line and focus on pulling the body up with the posterior deltoids and scapular retractors (middle trapezius and rhomboids). Adjust the level of difficulty by varying your body position. Stay more upright to make the exercise easier, and walk forward to create a greater trunk lean and more challenge.

Although this exercise has a short range of motion, it is important for balancing the shoulder musculature. Try your best to maintain tension on the posterior delts because these are often neglected and underdeveloped.



Y position, T position, W position, and L position.

Execution

1. From a standing position, bend at the hips past a 45-degree torso angle, maintaining a neutral spine while sitting back and stretching the hamstrings.
2. Perform 10 dynamic Y motions by forming a Y with the arms, returning to starting position after each repetition. Switch to 10 T motions with the arms, followed by 10 W motions.
3. Transition into 10 L motions by holding the arms straight out with the elbows bent at 90 degrees and rotating at the shoulder joint so that the forearms move from vertical to the ground to parallel to the ground.

Muscles Involved

Primary: Lower trapezius, middle trapezius, rotator cuff musculature (infraspinatus, teres minor), posterior deltoid

Secondary: Hamstrings (biceps femoris, semitendinosus, semimembranosus), gluteus maximus

Exercise Notes

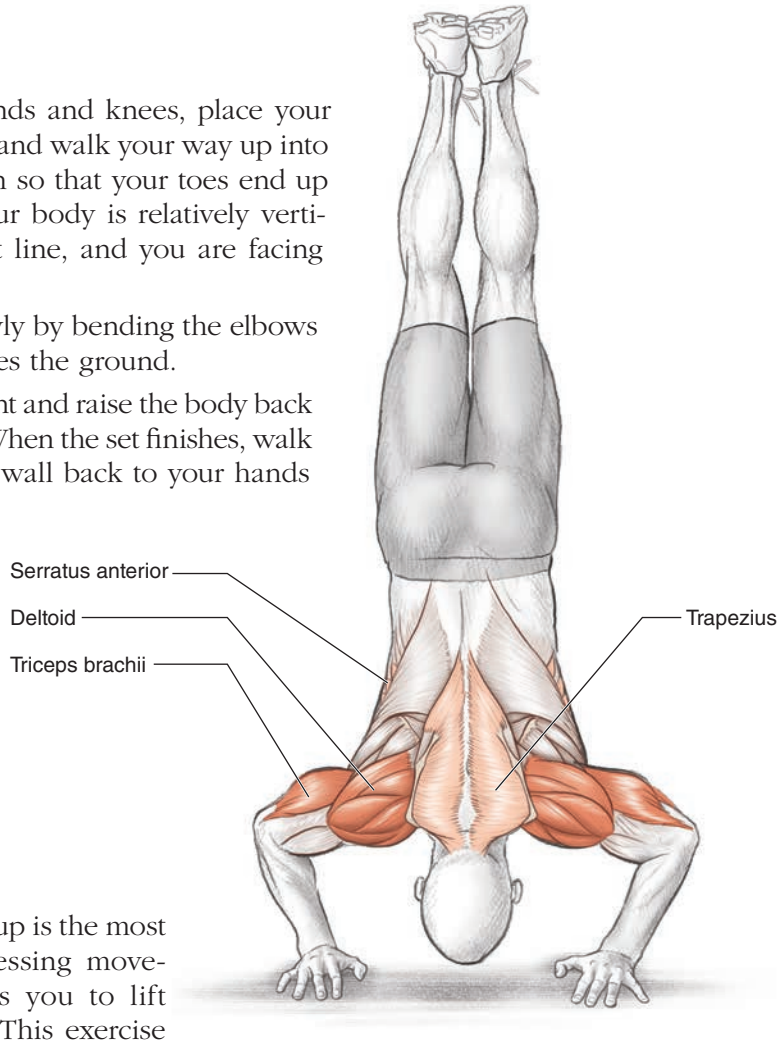
The YTWL is a terrific movement because it strengthens many of the crucial smaller muscles of the shoulder joint that provide stability and support for multijoint movements. These muscles are not called on much during everyday activity so by activating them during the YTWL exercise, you'll prevent future injury or dysfunction. It is important to keep these muscles healthy.

You'll be surprised how challenging bodyweight resistance is throughout the set. Maintain good posture and don't allow the back to round.

WALL HANDSTAND PUSH-UP

Execution

1. Starting on your hands and knees, place your feet against the wall and walk your way up into a handstand position so that your toes end up against the wall, your body is relatively vertical and in a straight line, and you are facing the wall.
2. Lower the body slowly by bending the elbows until the head reaches the ground.
3. Reverse the movement and raise the body back to starting position. When the set finishes, walk your way down the wall back to your hands and knees.



Muscles Involved

Primary: Deltoids, triceps brachii

Secondary: Upper and lower trapezius, serratus anterior

Exercise Notes

The wall handstand push-up is the most challenging overhead pressing movement because it requires you to lift your entire body weight. This exercise is much more challenging than a typical push-up for two reasons. First, people are stronger in horizontal pressing motions in comparison to vertical pressing motions. Second, the handstand push-up involves hoisting the entire body weight, whereas push-ups involve only about 70 percent because of the four points of contact with the floor and the angle of the torso.

There are several ways to perform this movement—feet against a wall behind the body, feet against a wall in front of the body, a partner holding the legs, or freestanding. Obviously the freestanding version is the most difficult because of balance requirements.