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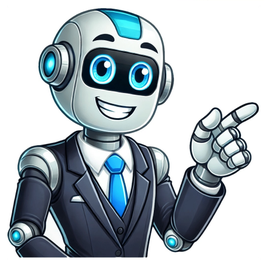

Weight training exercise Cable leg press machine The leg press is a compound weight training exercise in which the individual pushes a weight or resistance away from them using their legs. The term leg press machine refers to the apparatus used to perform this exercise.[1] The leg press can be used to evaluate an athlete's overall lower body strength (from the gluteus Maximus to the lower leg muscles). It can help to build squat strength.[2] If performed correctly, the inclined leg press can help build knees that can handle heavier free weights,[3] on the other hand, it also carries a risk of serious damage since locked knees can bend the wrong direction throughout the exercise.[4] It can be performed in variations, for example with one leg, or attaching bands to the leg press.[2] Incline leg press There are two main types of leg press: The diagonal (incline) or vertical 'sled' type leg press. Weight plates are directly attached to a sled, which is mounted on rails. The user sits below the sled and pushes it upward with their feet. These machines normally include adjustable safety brackets that prevent the user from being trapped under the weight. The 'cable' type leg press, or 'seated leg press', is commonly found in multigyms. This type involves the user sitting upright and pushing forward with their feet onto a plate. The plate is connected to the weight stack by a long steel cable. The leg press works the following muscle groups:[5][1] Quadriceps Hamstring Gluteus maximus Calves (partially) Varying the angle between the sled and the backrest and/or the position of the feet on the plate puts more emphasis on one or the other muscle group.[5] The leg press can be performed with one leg only. This can help to build stabilizing muscles. It is sometimes considered to be a more 'functional' exercise than the two-legged bilateral leg press because it can better replicate sporting or athletic movements where one leg is primarily being employed. According to the NFL quarterback Colin Kaepernick, 'I like single-leg work because it isn't often as a quarterback that both of your feet are stationary and planted.'[6] Performing the exercise one-legged may also help to correct strength imbalances between the legs. This is because during a bilateral two-legged leg press one side may be excessively dominant. Working both legs alternatively in a single-legged fashion means each leg has to perform the same amount of work.[7] A standing leg press is a one-legged variation which is performed with one foot on the floor and the other positioned ahead of the person on a wall. Keeping one foot on the floor, the person bends their leg and moves towards the wall, and then straightens their leg and moves away from the wall etc. Alternatively an unfixed sled or cable pulley machine can be used to provide resistance against which the person pushes against. Exercise Exercise physiology Wikimedia Commons has media related to Leg press machines. ^ a b "Incline Leg Press (Legs)". Fitness Volt. 6 April 2018. Retrieved 2020-10-16. ^ a b "Leg Press Guide". Barbend. Retrieved 2020-10-16. ^ "What Muscle Does the Incline Leg Press Work?". azcentral. (USA Today Network). Retrieved 2020-10-16. ^ "Lábtolás" (in Hungarian). Retrieved 2020-10-16. ^ a b Shawn Kovacich (2005). Achieving Kicking Excellence: Axe Kick. Chikara Kan. p. 210. ISBN 9780970749628. ^ Hall, Brandon (13 January 2016). "In Defense of the Leg Press: How To Reap The Benefits Of This Controversial Exercise". Stack.com. Retrieved 28 January 2021. ^ Tony Caterisano, Mike Gentry (2005). A Chance to Win: A Complete Guide to Physical Training for Football. Champaign: Sports Publishing L.L.C. p. 43. ISBN 1582619557. Análise anatômica e eletromiográfica dos exercícios de leg press, agachamento e stiff Retrieved from " Finding the right exercise for your workout can be tricky. There are so many options out there. But what if there was a guide that made it easy? Our Ultimate A-Z List Of Exercises With Pictures does just that. It offers you a clear, easy-to-follow directory of exercises from A to Z. This list covers everything you need for a full-body workout—whether you're looking to stretch, build muscle, or enhance your routine. I've spent over ten years coaching and writing about fitness and nutrition. My journey began in a local gym and led me to earn degrees in Physical Education and Sports Management, along with certifications in personal training and lifeguarding. I share my expertise through articles on sports nutrition, workout strategies, and by teaching at fitness seminars. This article draws on all that experience to give you the most comprehensive rundown of exercises available today. Get ready for your ultimate exercise guide! The Ultimate A-Z List Of Exercises offers a simple guide with pictures for each exercise, covering all you need for a full-body workout. Key exercises from every letter group target different body parts, such as Arms with Biceps Curl and Butt with Barbell Squats. Proper technique matters in doing exercises right, like aligning your knees over toes in squats and breathing correctly to enhance performance. Consistency in practicing these exercises enhances strength and form, offering varied routines to keep workouts fresh. This guide makes fitness accessible by providing detailed descriptions and images for each listed exercise. We made a big list of moves from A to Z. Each move has a short story and a picture to show you how to do it. To give you the best guide for your fitness journey, we've put together a comprehensive list. This includes a mix of exercises, complete with visuals to help you nail the form. Each exercise comes with a simple explanation. This way, you get the picture—literally and figuratively. From firsthand experience, the key to mastering these moves is consistency. Whether it's arm curls or elbow planks, practicing regularly will enhance your strength and form. And with this list, you've got a variety of exercises to keep your workouts fresh and challenging. Each description and image here is a starting point. Dive in, try them out, and find what works best for you. Fitness is a personal journey, one where the best results come from a mix of patience, perseverance, and the right guidance. Here we dive into key exercises from every letter group. This list includes moves for all parts of the body. Arms – Biceps Curl: Stand tall with weights in your hands. Keep those palms facing up. Now, lift the weights towards your shoulders. I've seen great arm growth with this classic move. Butt – Barbell Squats: Place a bar across your back standing up straight. Squat down as if sitting in a chair then stand back up. It targets more than just your glutes, promising a solid lower-body workout. Core – Plank: Lie face down then push up on your hands and toes. Keep your body straight like a plank of wood. It looks easy but wait till you try holding it for over a minute! Deadlifts for Legs: Stand with feet hip-width apart, holding a bar or free weights in front of you. Bend at the hips to lower the weight, then pull it back up, keeping that back straight! This move seriously boosts leg and back strength. Exercise for High Knees: Run in place lifting those knees as high as they'll go. Pump your arms to keep balance and speed up the heart rate. Flexibility – Butterfly Stretch: Sit on the ground and press the soles of your feet together; now lean forward gently from the hips. You'll feel this stretch right through your inner thighs. Glutes – Hip Thrusts: Sit on the ground leaning against a bench, roll a bar over your lap, and thrust those hips upward; squeeze hard at the top! You can really shape your rear end with these. Hamstrings – Romanian Deadlifts: Hold weights in front of you, stand straight then hinge at the waist; keep those legs almost straight as you lower down and lift again. Incline Push-up for Chest: Find an elevated surface like a bench or step; do push-ups against it to target upper chest muscles better than flat push-ups do. .Jumps – Box Jumps: Stand before a sturdy box or platform; bend knees deeply then jump onto it landing softly; step down and repeat for explosive leg power! .Kettlebell Swing for Full Body: Grab that kettlebell with both hands, swing it between legs then thrust hips forward swinging it chest height while keeping arms loose—it works everything! .Lunges for Quads, Step forward with one leg bending both knees until rear knee nearly touches ground — push back up to start position to hit those thigh muscles hard. Each exercise listed above teaches us valuable lessons about movement and strength building while covering different parts of our bodies—from arms to legs—to make sure we're working out every major muscle group effectively using proper form and resistance training techniques learned from firsthand experience coaching folks just like you! After exploring some standout exercises from each letter, it's time to focus on how to do them right. Getting the hang of each move matters. Start by finding your grip. Whether you're lifting dumbbells or swinging kettlebells, how you hold them shapes your workout. Keep your starting position solid—feet planted and body balanced. Your power comes from a strong start. For squats, press-ups, or lunges, align your body just so. Your knees should line up over your toes; keep your back straight. Breathing is key too—inhale as you lower down, exhale when pushing up or out. And always pace yourself; rushing leads to slips and less effective training. Lastly, don't skip the finish—ease out of movements rather than stopping short to make every rep count and protect against strain injuries. We walked you through an A-Z list of workouts. This showed all kinds of body movements and fitness tips. You saw how doing these can be simple and effective. We shared tools like dumbbells and pull-up bars to help you get stronger. Now, take what you learned and use it every day to get fit. Your journey to health just got easier with this guide by your side! You'll discover a complete list of exercises, each with pictures to show you how to perform them right. From arm curls to calf raises, it covers every muscle group. Yes! Alongside photos, there are videos for some exercises. This way, you get to see the moves in action, helping you nail the perfect form. Absolutely! Whether you're looking to work on your triceps or strengthen your legs, this directory sorts exercises by category and body part—like neck or gluteus maximus—making it easy to find what you need. For sure! The guide is made for everyone. It shows simple steps on how to do each exercise from standing positions or even sitting ones if needed. It's pretty broad; from strength training using barbells for bench presses to plyometric training like squat jumps—it's all there! Yes, each entry talks about keeping safe while exercising—like not overextending your knee during lunges—to help avoid injury and make sure your workouts are effective. Share — copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt — remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution — You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. Here you will find our complete list of strength training exercises. All strength training exercises have detailed instructions, muscles worked, and a video demonstration. All exercise descriptions are also available for free in our workout log app. All exercise descriptions are available for free in our workout app StrengthLog, in which you can also track your workouts, build workout routines, and follow our strength training programs. Download StrengthLog for free with the links below: Feel free to use these exercise descriptions, images, and videos on your website as long as you link to us as the source. Here is our complete list of strength training exercises, sorted by muscle group and name. Barbell Wrist Extension Dumbbell Wrist Extension Rowing Machine Stationary Bike This is our recommended list of the best strength training exercises for every major muscle group. These are time-tested classics that have proven their effectiveness both in the trenches and in the research labs. Which exercise is best for you will depend on your anatomy, background, and preferences, but this list should give you a starting point. For most of the muscle groups below, we try to list at least one compound exercise and one isolation exercise. By combining two or three of the strength exercises listed for each muscle group, you should be able to work most of the muscle fibers of the target muscles effectively. Bench Press Incline Dumbbell Press Bar Dips Standing Cable Chest Fly Read more about the best chest exercises. Read more about the best shoulder exercises. Deadlift Lat Pulldown Pull-Up Barbell Row Dumbbell Row Read more: How to Train Your Back Muscles Barbell Curl Dumbbell Curl Hammer Curl Read more: How to Train Your Biceps Read more about the best tricep exercises. Squat Hack Squats Leg Extension Bulgarian Split Squat Read more: How to Train Your Quad Muscles Seated Leg Curl Lying Leg Curl Romanian Deadlift Read more: How to Train Your Hamstring Muscles Squat Hip Thrust Romanian Deadlift Bulgarian Split Squat Read more: How to Train Your Glute Muscles Cable Crunch Hanging Leg Raise High to Low Wood Chop Crunch Read more: How to Train Your Abs Standing Calf Raise Seated Calf Raise Read more: How to Train Your Calf Muscles Related articles: The four basic strength training exercises refer to the four fundamental movements of resistance training. They are four movements that, together, cover a large part of what we can do with our bodies. The idea is that if you do at least one exercise for each fundamental movement, you will have worked almost all your major muscle groups. At least one exercise from each of these four basic movements should be included in every comprehensive strength training program. The four fundamental movements are: Push something away from you. Examples: bench press, overhead press, push-ups, machine chest press. Pull something towards you. Examples: pull-ups, lat pulldown, barbell row, dumbbell row, cable row. Hip hinge. Examples: deadlift, good morning, Romanian deadlift, clean, kettlebell swing. Squat. Examples: squat, front squat, Bulgarian split squat, goblet squat, leg press. Push, pull, hinge, and squat. That's it. The bench press, barbell row, deadlift, and squat. Four exercises, four fundamental movements. Generally speaking: Pick one exercise from each category and train it once or more per week, and you will have an excellent strength training program for basically your entire body. If you train with a barbell and pick one exercise from each category, it might be bench press, barbell row, deadlift, and squat. If you train with kettlebells, it might be kettlebell press, kettlebell row, kettlebell swing, and goblet squat or front squat with the kettlebells in the rack position. If you train with machines, it might be chest press, machine row, back extension, and leg press. Can't we leave a nice thing alone? Alright. If you want to get fancy, there are two things you can add. While the back of your core gets plenty of training in most hip hinge and squat exercises, your abs and obliques (the front and sides) don't. To rectify this, you could add an ab exercise from the list of exercises above. For even more comprehensive upper body training, you could split up the pushing and pulling movements into horizontal and vertical planes of motion. Horizontal movements have your arm working about 90 degrees out from your body, i.e. where the arm would be horizontal if you were standing upright. Examples: Horizontal pushes: bench press, dumbbell chest press, and push-ups. Horizontal pulls: barbell row, dumbbell row, and cable row. Vertical movements have your arm working over your head. Examples: Vertical pushes: overhead press, dumbbell shoulder press, and kettlebell press. Vertical pulls: lat pulldown and pull-up. Horizontal and vertical movements will emphasize slightly different muscles, or different regions in large muscles, and can thus lead to more complete training. An exercise is effective for building muscle if it: Works the muscle through a long range of motion. Is stable enough for your muscle power to be the limiting factor, and not your balance. Trains multiple muscles simultaneously (these exercises are often called compound exercises). Of course, you don't have to train several muscles in the same exercise, but it is time-effective to use compound exercises as they will help you train all your major muscle groups more quickly. Not that we're aware of. But … A lot of people would say the deadlift. The deadlift. While the deadlift certainly uses a lot of muscle mass at the same time, it doesn't work all major muscle groups. The deadlift primarily works your posterior chain: your glutes, lower back, hamstrings, adductors, traps, and of course grip. This leaves out the muscles in your upper arms, shoulders, lats, and abdominals. Your quads aren't worked very effective either. Another exercise that comes to mind is the clean and jerk (or clean and press). The clean and jerk basically combines a deadlift-like movement with an overhead jerk, adding some work for your legs, shoulders and arms. You might argue, however, that the clean and jerk is actually two exercises combined (the clean and the jerk), and thus not "one exercise for the whole body". No matter how you slice it, both the deadlift and clean and jerk are still two fantastic exercises, and if one of them was all you ever did, you would still do pretty good. Free weights refer to all kinds of training equipment that isn't attached to something. The most common ones being barbells, dumbbells and kettlebells. Machines refer to training equipment that is fixed in one way or another. For example, it could be machines for leg presses or leg extensions, or smith machines. While some may preach the superiority of one or the other, the truth is that free weights and machines both have their pros and cons that you should consider when planning your training. To learn which is better for your goals, check out our article on free weights vs. machines. We analyzed millions of workouts from hundreds of thousands of users of our workout tracker to find the most popular exercises. You can see the results in the article: The Most Popular Gym Exercises for Men & Women. Want more? Subscribe to our weekly newsletter to get notified of new articles, and get weekly training tips! **List of Exercises A-Z** Exercises from A-Z offer a comprehensive guide to various fitness activities. This list includes exercises for all fitness levels. Staying active is crucial for maintaining overall health and well-being. A diverse exercise regimen can help target different muscle groups and improve cardiovascular health. From aerobic activities to strength training, an A-Z list of exercises provides numerous options to keep workouts engaging and effective. Whether you prefer high-intensity workouts or calming yoga sessions, this guide covers it all. Experimenting with various exercises ensures a balanced fitness routine and reduces the risk of injury. Regularly incorporating new exercises can prevent workout monotony and keep you motivated. This comprehensive list serves as an excellent resource for anyone looking to enhance their fitness journey. Credit: www.pinterest.com Welcome to the ultimate guide for fitness enthusiasts! Our A-Z Fitness guide offers a comprehensive list of exercises. This guide covers every muscle group and fitness level. Whether you're a beginner or a pro, there's something for you here. Why An Alphabetical Exercise Guide? An alphabetical exercise guide helps you find exercises easily. It is organized from A to Z. This makes it simple to navigate. You won't have to search endlessly to find the perfect exercise. It is especially useful for planning varied workout routines. How To Use This Guide Using this guide is straightforward. Each exercise is listed alphabetically. Scroll through the list to find exercises. Click on the exercise name to see detailed instructions. You can also check the difficulty level and targeted muscle groups. Letter Exercise A Arm Circles B Burpees C Crunches Use the table above to jump directly to your desired exercise. It's a quick way to locate specific workouts. This guide aims to make your fitness journey smoother. Credit: blog.myfitnesspal.com Aerobic exercises are crucial for boosting cardiovascular health. These exercises increase your heart rate and improve blood circulation. They help you maintain a healthy weight and reduce the risk of chronic diseases. Here are some effective aerobic exercises listed alphabetically. A For Aerobics Aerobics involves rhythmic activities that increase your heart rate. You can do it in a class or at home. Common moves include stepping, jumping jacks, and dance routines. This exercise is great for improving stamina and burning calories. B For Biking Biking is an excellent way to strengthen your heart. You can bike outdoors or use a stationary bike. It is low-impact and easy on the joints. Biking also helps in improving lung capacity and building leg muscles. C For Circuit Training Circuit training combines aerobic and strength exercises. It involves moving quickly between different exercises. This keeps your heart rate up and burns more calories. Circuit training is ideal for those who want a full-body workout. Exercise Benefits Aerobics Improves stamina, burns calories Biking Strengthens heart, builds leg muscles Circuit Training Full-body workout, burns more calories Strength and muscle tone are key to a healthy body. Building strength helps in daily activities. Muscle tone boosts your physical appearance. Exercises from A-Z target all muscle groups. Here are some top exercises for strength and muscle tone. D For Deadlifts Deadlifts are a powerful exercise. They work on multiple muscle groups. The primary muscles targeted are: Hamstrings Glutes Lower back Core To perform a deadlift: Stand with feet hip-width apart. Grip the barbell with both hands. Keep your back straight. Lift the barbell by straightening your hips and knees. Lower the barbell back to the ground. See also Exercises That Start With M: Maximize Your FitnessDeadlifts enhance core stability and improve posture. E For Eccentric Training Eccentric training focuses on the lengthening phase of muscle contraction. It is beneficial for muscle growth and strength. Common eccentric exercises include: Exercise Muscle Group Negative Pull-Ups Back, Biceps Slow Squats Quads, Glutes Controlled Push-Ups Chest, Triceps To perform eccentric training: Focus on lowering the weight slowly. Take 3-5 seconds for the lowering phase. Use a lighter weight than usual. F For Free Weights Free weights include dumbbells, barbells, and kettlebells. These tools are essential for strength training. Benefits of free weights are: Improved muscle coordination Increased range of motion Enhanced muscle balance Popular free weight exercises include: Bench Press Bicep Curls Kettlebell Swings Using free weights can lead to better muscle activation. They are also versatile and can be used anywhere. Building a strong core is crucial for overall fitness. A stable core helps improve posture, balance, and performance in many sports. In this section, we'll explore key exercises to enhance core strength and stability. G For Planks Planks are a fantastic exercise for core stability. They engage multiple muscle groups, including the abs, back, and shoulders. To perform a plank: Start in a push-up position. Keep your body in a straight line. Hold the position for as long as possible. Planks can be modified to increase difficulty. Try side planks or plank jacks for variation. H For Hip Raises Hip Raises, also known as glute bridges, target the lower back, glutes, and abs. They help improve hip mobility and core strength. Here's how to do hip raises: Lie on your back with knees bent. Keep your feet flat on the ground. Lift your hips towards the ceiling. Hold for a few seconds and lower back down. For added challenge, try single-leg hip raises or weighted hip raises. I For Isometric Holds Isometric Holds involve holding a position without movement. This exercise strengthens muscles and improves endurance. To perform an isometric hold: Choose a position like a wall sit or plank. Hold the position for a set time. Focus on maintaining proper form. Isometric holds can be integrated into other exercises for added intensity. Dynamic movement and agility are key for improving coordination and speed. These exercises also enhance your overall athletic performance. In this section, we focus on three exercises: Jump Rope, Kettlebell Swings, and Lateral Drills. J For Jump Rope Jump rope is a fun and effective exercise. It improves cardiovascular fitness and coordination. Here are some benefits and steps to get started: Benefits: Improves heart health Burns calories Enhances footwork Steps: Hold the rope handles firmly. Keep your elbows close to your body. Jump as the rope swings under your feet. K For Kettlebell Swings Kettlebell swings are great for building strength and endurance. They target multiple muscle groups. Follow these steps for a proper kettlebell swing: Benefits: Strengthens core muscles Improves balance Boosts power Steps: Stand with feet shoulder-width apart. Hold the kettlebell with both hands. Swing the kettlebell between your legs. Drive your hips forward and swing it up. L For Lateral Drills Lateral drills enhance side-to-side movement and agility. They are crucial for sports and daily activities. Here are some examples and their benefits: Drill Benefits Side Shuffles Improves speed and coordination Grapevines Enhances footwork and agility Lateral Bounds Boosts leg strength and balance Steps for Side Shuffles: Stand with feet together. Step to the side with one foot. Quickly bring the other foot to meet it. Endurance training is key to a long, healthy life. It helps your heart, lungs, and muscles. This type of exercise boosts your stamina and energy levels. It also reduces the risk of chronic diseases. Let's dive into some endurance exercises from A-Z. M For Marathon Prep Marathon prep is crucial for long-distance runners. This training builds your stamina over time. Start with short runs and gradually increase the distance. Include rest days to allow your body to recover. Here's a sample plan: Week Distance (Miles) 1 3 2 5 3 7 4 10 N For Nordic Skiing Nordic skiing is a full-body workout. It improves cardiovascular health and endurance. Skiing engages both upper and lower body muscles. This activity is great for burning calories. Here's why it's beneficial: Low impact on joints Improves balance and coordination Boosts mental well-being O For Obstacle Courses Obstacle courses challenge your body in unique ways. They combine running, climbing, and jumping. This training improves agility and endurance. It's also fun and keeps you motivated. Key benefits include: Full-body workout Builds strength and stamina Enhances problem-solving skills Try adding these activities to your routine for better endurance and longevity. Flexibility and balance exercises help improve your body's range of motion. These exercises can prevent injuries and enhance overall physical performance. Here is a list of exercises focusing on flexibility and balance from A to Z. P For Pilates Pilates is a low-impact exercise that strengthens muscles while improving posture. It involves controlled movements and breathing techniques. Key benefits include better flexibility, balance, and core strength. Here are some common Pilates exercises: The Hundred Roll-Up Leg Circles Plank Q For Quadruped Exercises Quadruped exercises are performed on all fours and are great for stability. They strengthen the core, shoulders, and hips. These exercises also improve coordination and balance. Here are some examples: Bird Dog Fire Hydrant Donkey Kicks R For Resistance Stretching Resistance stretching combines stretching and resistance training. It enhances flexibility and muscle strength. This method uses your own body weight or external resistance. Key exercises include: PNF Stretching Isometric Stretching Dynamic Stretching Credit: www.pinterest.com Group fitness classes bring people together. They create a sense of community. Working out with others can be fun. It adds motivation and energy. Here's a list of popular group fitness classes. S For Spin Classes Spin classes are high-energy cycling workouts. They take place on stationary bikes. An instructor leads the class. The music is upbeat and motivational. Burn calories Improve cardiovascular health Build muscle strength Spin classes are suitable for all fitness levels. Adjust the bike's resistance to match your ability. The community vibe keeps everyone motivated. T For Team Sports Team sports are a fun way to stay fit. They include games like soccer, basketball, and volleyball. Playing in teams builds social connections. Sport Benefits Soccer Cardio, agility, teamwork Basketball Speed, coordination, strategy Volleyball Strength, reflexes, cooperation Team sports encourage a sense of community. They are great for building friendships and staying active. U For Urban Rebounding Urban rebounding is a fun, high-energy workout. It involves jumping on a mini-trampoline. This activity is easy on the joints. Boosts cardiovascular health Strengthens muscles Improves balance Urban rebounding classes are lively and enjoyable. The group setting makes it even more fun. You'll feel the community spirit as you bounce. High-Intensity Interval Training, or HIIT, is a workout method. It involves short, intense bursts of exercise followed by rest. HIIT boosts your heart rate quickly and burns fat efficiently. It is great for those with busy schedules as it offers maximum benefits in minimal time. V For V-sits V-Sits are an excellent core exercise. They target the abs and improve balance. Here's how to perform V-Sits: Start by sitting on the floor. Extend your legs straight out in front of you. Lean back slightly while keeping your back straight. Raise your legs to form a "V" shape with your body. Hold the position for a few seconds. Repeat this movement for 10-15 reps. V-Sits help strengthen your core muscles. W For Wind Sprints Wind Sprints are short, fast runs. They improve speed and stamina. Here's a simple guide to performing Wind Sprints: Find a flat, open space. Sprint as fast as you can for 20-30 seconds. Walk or jog for 1-2 minutes to recover. Repeat this cycle 5-10 times. Wind Sprints are great for cardiovascular health. They also burn lots of calories in a short time. X For X-trainer Workouts X-Trainer Workouts use a cross-trainer machine. This machine offers a full-body workout. Follow these steps for an effective X-Trainer session: Step Action 1 Start with a 5-minute warm-up at a moderate pace. 2 Increase the resistance and speed for 1 minute. 3 Return to a moderate pace for 2 minutes. 4 Repeat these intervals for 20-30 minutes. X-Trainer Workouts improve endurance and muscle strength. They are also low-impact, making them gentle on the joints. Exercise trends evolve continually, introducing new ways to stay fit and engaged. From ancient practices to modern routines, these trends offer something for everyone. Below, we explore some exciting and innovative exercise trends that are making waves in the fitness world. Y For Yoga Wheel Workouts Yoga wheel workouts are a fresh take on traditional yoga practices. The yoga wheel is a circular prop used to enhance flexibility and strength. It helps to deepen stretches and improve balance. Flexibility: The wheel aids in stretching your back, shoulders, and hips. Strength: It supports challenging poses, building core strength. Balance: Enhances stability in various yoga poses. Yoga wheel workouts are great for all skill levels. This trendy prop adds fun and variety to your yoga routine. See also Exercises That Start With L: Boost Your Fitness GameZ For Zumba Fitness Zumba fitness combines dance and aerobic movements to create a high-energy workout. It is inspired by Latin dance styles and is set to lively music. Benefits Description Cardio: Boosts heart health through continuous movement. Fun: Engaging dance routines make exercise enjoyable. Community: Group classes foster a sense of belonging. Zumba is suitable for all ages and fitness levels. It turns exercise into a fun dance party. Beyond The Alphabet – Emerging Trends Beyond traditional exercises, new trends are emerging. These trends focus on unique and innovative ways to stay active. Virtual Reality Workouts: Experience immersive fitness adventures. HIIT with Wearables: Track performance with smart technology. Mindfulness and Movement: Combine meditation with gentle exercises. These emerging trends provide fresh and exciting ways to maintain fitness. Incorporate them into your routine for a varied and effective workout regimen. Proper nutrition and recovery are essential parts of any exercise regimen. Fueling your body right and ensuring adequate recovery helps improve performance and prevent injuries. Let's dive into some key aspects of nutrition and recovery. Fueling For Fitness Eating the right foods before and after workouts is crucial. Here are some tips to help you fuel your body effectively: Carbohydrates provide energy. Include whole grains, fruits, and vegetables. Proteins aid muscle repair. Opt for lean meats, beans, and nuts. Fats support cell function. Include avocados, nuts, and olive oil. Hydration is key. Drink water before, during, and after exercise. Post-workout Recovery Strategies Recovery is just as important as the workout itself. Implement these strategies for effective recovery: Stretching: Helps reduce muscle stiffness and improve flexibility. Rest: Ensure you get enough sleep to allow muscles to repair. Nutrition: Consume a balanced meal within 2 hours post-workout. Hydration: Replenish lost fluids with water or electrolyte drinks. Massage: Use foam rollers or get a professional massage to relieve muscle tension. Here is a table to summarize the key nutrients and their sources: Nutrient Sources Carbohydrates Whole grains, fruits, vegetables Proteins Lean meats, beans, nuts Fats Avocados, nuts, olive oil Creating a personalized workout plan can help you reach your fitness goals. It ensures that you stay motivated and focused. Here, we provide tips on how to create your own plan. Setting Realistic Goals Start by setting realistic goals. Identify what you want to achieve. Your goals should be specific and measurable. For example: Lose 10 pounds in three months Run a 5K in under 30 minutes Lift 20 pounds more in six weeks Break down larger goals into smaller steps. This makes them easier to achieve. Mixing And Matching Exercises Variety is key. Mixing and matching exercises keeps workouts interesting. Here is a table of exercises from A-Z: Add more exercises for each letter Letter Exercise A Arm Circles B Burpees C Crunches Combine cardio, strength, and flexibility exercises. This will give you a balanced workout. Tracking Progress Tracking your progress helps you stay on track. Use a journal or an app. Record your workouts and achievements. Here's a simple way to track: Date of workout Type of exercise Duration or reps Notes on performance Review your progress weekly. This will help you see improvements. Adjust your plan if needed. Exercise is essential for a healthy life, but safety must come first. Preventing injury is crucial to stay active and enjoy workouts. The following guidelines will help keep you safe and injury-free. Understanding Your Body's Limits Your body has unique limits. Respect them to avoid injury. Know your strength, flexibility, and endurance levels. Never push beyond what feels comfortable. Listen to your body's signals. Stop if you feel pain or discomfort. The Importance Of Proper Form Proper form is key to safe exercise. It ensures that you use the right muscles and avoid strain. Here are a few tips to maintain proper form: Keep your back straight during lifts. Engage your core for balance. Use a mirror to check your posture. Seek advice from a trainer if unsure. When To Rest And Recover Rest and recovery are essential parts of any fitness routine. Your muscles need time to heal and grow stronger. Follow these tips for optimal recovery: Take at least one rest day per week. Get 7-9 hours of sleep each night. Stay hydrated and eat a balanced diet. Use stretching and massage to ease soreness. By following these guidelines, you can enjoy a safe and effective exercise regimen. The 20-20-20 exercise helps reduce eye strain. Every 20 minutes, look at something 20 feet away for 20 seconds. The 8 essential exercises are squats, deadlifts, push-ups, pull-ups, lunges, planks, rows, and shoulder presses. These target all major muscle groups for a balanced workout. For chest, do push-ups and bench presses. For back, try pull-ups and rows. For legs, use squats and lunges. For arms, do bicep curls and tricep dips. For shoulders, perform shoulder presses and lateral raises. For core, practice planks and crunches. Exercises like planks, bicycle crunches, and leg raises target belly fat. Combine with cardio and a healthy diet for best results. Discovering the right exercise is key to a healthy lifestyle. This A-Z list offers diverse options for everyone. From aerobics to Zumba, there's something for every fitness level. Start incorporating these exercises into your routine today. Stay active, stay healthy, and enjoy the benefits of a balanced workout regime. How can financial brands set themselves apart through visual storytelling? Our experts explain how.Learn MoreThe Motorsport Images Collections captures events from 1895 to today's most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors' Picks.Browse Editors' FavoritesHow can financial brands set themselves apart through visual storytelling? Our experts explain how.Learn MoreThe Motorsport Images Collections captures events from 1895 to today's most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors' Picks.Browse Editors' FavoritesHow can financial brands set themselves apart through visual storytelling? Our experts explain how.Learn MoreThe Motorsport Images Collections captures events from 1895 to today's most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors' Picks.Browse Editors' Favorites Here you will find our complete list of strength training exercises. All strength training exercises have detailed instructions, muscles worked, and a video demonstration. All exercise descriptions are also available for free in our workout log app. All exercise descriptions are available for free in our workout app StrengthLog, in which you can also track your workouts, build workout routines, and follow our strength training programs. Download StrengthLog for free with the links below: Feel free to use these exercise descriptions, images, and videos on your website as long as you link to us as the source. Here is our complete list of strength training exercises, sorted by muscle group and name. Barbell Wrist Extension Dumbbell Wrist Extension Rowing Machine Stationary Bike This is our recommended list of the best strength training exercises for every major muscle group. These are time-tested classics that have proven their effectiveness both in the trenches and in the research labs. Which exercise is best for you will depend on your anatomy, background, and preferences, but this list should give you a starting point. For most of the muscle groups below, we try to list at least one compound exercise and one isolation exercise. By combining two or three of the strength exercises listed for each muscle group, you should be able to work most of the muscle fibers of the target muscles effectively. Bench Press Incline Dumbbell Press Bar Dips Standing Cable Chest Fly Read more about the best chest exercises. Read more about the best shoulder exercises. Deadlift Lat Pulldown Pull-Up Barbell Row Dumbbell Row Read more: How to Train Your Back Muscles Barbell Curl Dumbbell Curl Hammer Curl Read more: How to Train Your Biceps Read more about the best tricep exercises. Squat Hack Squats Leg Extension Bulgarian Split Squat Read more: How to Train Your Quad Muscles Seated Leg Curl Lying Leg Curl Romanian Deadlift Read more: How to Train Your Hamstring Muscles Squat Hip Thrust Romanian Deadlift Bulgarian Split Squat Read more: How to Train Your Glute Muscles Cable Crunch Hanging Leg Raise High to Low Wood Chop Crunch Read more: How to Train Your Abs Standing Calf Raise Seated Calf Raise Read more: How to Train Your Calf Muscles Related articles: The four basic strength training exercises refer to the four fundamental movements of resistance training. They are four movements that, together, cover a large part of what we can do with our bodies. The idea is that if you do at least one exercise for each fundamental movement, you will have worked almost all your major muscle groups. At least one exercise from each of these four basic movements should be included in every comprehensive strength training program. The four fundamental movements are: Push something away from you. Examples: bench press, overhead press, push-ups, machine chest press. Pull something towards you. Examples: pull-ups, lat pulldown, barbell row, dumbbell row, cable row. Hip hinge. Examples: deadlift, good morning, Romanian deadlift, clean, kettlebell swing. Squat. Examples: squat, front squat, Bulgarian split squat, goblet squat, leg press. Push, pull, hinge, and squat. That's it. The bench press, barbell row, deadlift, and squat. Four exercises, four fundamental movements. Generally speaking: Pick one exercise from each category and train it once or more per week, and you will have an excellent strength training program for basically your entire body. If you train with a barbell and pick one exercise from each category, it might be bench press, barbell row, deadlift, and squat. If you train with kettlebells, it might be kettlebell press, kettlebell row, kettlebell swing, and goblet squat or front squat with the kettlebells in the rack position. If you train with machines, it might be chest press, machine row, back extension, and leg press. Can't we leave a nice thing alone? Alright. If you want to get fancy, there are two things you can add. While the back of your core gets plenty of training in most hip hinge and squat exercises, your abs and obliques (the front and sides) don't. To rectify this, you could add an ab exercise from the list of exercises above. For even more comprehensive upper body training, you could split up the pushing and pulling movements into horizontal and vertical planes of motion. Horizontal movements have your arm working about 90 degrees out from your body, i.e. where the arm would be horizontal if you were standing upright. Examples: Horizontal pushes: bench press, dumbbell chest press, and push-ups. Horizontal pulls: barbell row, dumbbell row, and cable row. Vertical movements have your arm working over your head. Examples: Vertical pushes: overhead press, dumbbell shoulder press, and kettlebell press. Vertical pulls: lat pulldown and pull-up. Horizontal and vertical movements will emphasize slightly different muscles, or different regions in large muscles, and can thus lead to more complete training. An exercise is effective for building muscle if it: Works the muscle through a long range of motion. Is stable enough for your muscle power to be the limiting factor, and not your balance. Trains multiple muscles simultaneously (these exercises are often called compound exercises). Of course, you don't have to train several muscles in the same exercise, but it is time-effective to use compound exercises as they will help you train all your major muscle groups more quickly. Not that we're aware of. But … A lot of people would say the deadlift. The deadlift. While the deadlift certainly uses a lot of muscle mass at the same time, it doesn't work all major muscle groups. The deadlift primarily works your posterior chain: your glutes, lower back, hamstrings, adductors, traps, and of course grip. This leaves out the muscles in your upper arms, shoulders, lats, and abdominals. Your quads aren't worked very effective either. Another exercise that comes to mind is the clean and jerk (or clean and press). The clean and jerk basically combines a deadlift-like movement with an overhead jerk, adding some work for your legs, shoulders and arms. You might argue, however, that the clean and jerk is actually two exercises combined (the clean and the jerk), and thus not "one exercise for the whole body". No matter how you slice it, both the deadlift and clean and jerk are still two fantastic exercises, and if one of them was all you ever did, you would still do pretty good. Free weights refer to all kinds of training equipment that isn't attached to something. The most common ones being barbells, dumbbells and kettlebells. Machines refer to training equipment that is fixed in one way or another. For example, it could be machines for leg presses or leg extensions, or smith machines. While some may preach the superiority of one or the other, the truth is that free weights and machines both have their pros and cons that you should consider when planning your training. To learn which is better for your goals, check out our article on free weights vs. machines. We analyzed millions of workouts from hundreds of thousands of users of our workout tracker to find the most popular exercises. You can see the results in the article: The Most Popular Gym Exercises for Men & Women. Want more? Subscribe to our weekly newsletter to get notified of new articles, and get weekly training tips! Exercise to improve strength A gym where various forms of strength training are being practiced. From left: overhead presses, battle ropes, planking, and kettlebell raises. Strength training, also known as weight training or resistance training, is exercise designed to improve physical strength. It is often associated with the lifting of weights. It can also incorporate techniques such as bodyweight exercises (e.g., push-ups, pull-ups, and squats), isometrics (holding a position under tension, like planks), and plyometrics (explosive movements like jump squats and box jumps).[1] Training works by progressively increasing the force output of the muscles and uses a variety of exercises and types of equipment. Strength training is primarily an anaerobic activity, although circuit training also is a form of aerobic exercise. Strength training can increase muscle, tendon, and ligament strength as well as bone density, metabolism, and the lactate threshold; improve joint and cardiac function; and reduce the risk of injury in athletes and the elderly. For many sports and physical activities, strength training is central or is used as part of their training regimen. This article will cover many topics including principles and training methods, comparisons of different exercises, nutrition, history, and safety concerns. Strength training follows the fundamental principle that involves repeatedly overloading a muscle group. This is typically done by contracting the muscles against heavy resistance and then returning to the starting position. This process is repeated for several repetitions until the muscles reach the point of failure.[2] The basic method of resistance training uses the principle of progressive overload, in which the muscles are overloaded by working against as high resistance as they are capable of. They respond by growing larger and stronger.[3] Beginning strength-trainers are in the process of training the neurological aspects of strength, the ability of the brain to generate a rate of neuronal action potentials that will produce a muscular contraction that is close to the maximum of the muscle's potential.[4] A dumbbell half-squat.[5] Strength training also requires the use of proper or 'good form', performing the movements with the appropriate muscle group, and not transferring the weight to different body parts in order to move greater weight (called 'cheating'). An injury or an inability to reach training objectives might arise from poor form during a training set. If the desired muscle group is not challenged sufficiently, the threshold of overload is never reached and the muscle does not gain in strength. At a particularly advanced level, however, "cheating" can be used to break through strength plateaus and encourage neurological and muscular adaptation.[6] Maintaining proper form is one of the many steps in order to perfectly perform a certain strength training technique. Correct form in weight training improves strength, muscle tone, and maintaining a healthy weight. Improper form can lead to strains and fractures.[7] Main article: Warming up Weight trainers often spend time warming up before starting their workout, a practice strongly recommended by the National Strength and Conditioning Association (NSCA). A warm-up may include cardiovascular activity such as light stationary biking (a "pulse raiser"), flexibility and joint mobility exercises, static and/or dynamic stretching, "passive warm up" such as applying heat pads or taking a hot shower, and workout-specific warm-up,[8] such as rehearsal of the intended exercise with no weights or light weights. The intended purpose of warming up is to enhance exercise effectiveness and reduce the risk of injury.[9] Evidence is limited regarding whether warming up reduces injuries during strength training.[9] As of 2015, no articles existed on the effects of warm-up for upper body injury prevention.[10] For the lower limbs, several programs significantly reduce injuries in sports and military training, but no universal injury prevention program has emerged, and it is unclear if warm-ups designed for these areas will also be applicable to strength training.[11] Static stretching can increase the risk of injury due to its analgesic effect and cellular damage caused by it.[12] The effects of warming up on exercise effectiveness are clearer. For 1RM trials, an exercise rehearsal has significant benefits. For submaximal strength training (3 sets of 80% of 1RM to failure), exercise rehearsal does not provide any benefits regarding fatigue or total repetitions for exercises such as bench press, squats, and arm curl, compared to no warm-up.[9] Dynamic warm-ups (performed with greater than 20% of maximal effort) enhance strength and power in upper-body exercises.[10] When properly warmed up the lifter will have more strength and stamina since the blood has begun to flow to the muscle groups.[13] Pulse raisers do not have any effect on either 1RM or submaximal training.[9] Static stretching induces strength loss, and should therefore probably not be performed before strength training. Resistance training functions as an active form of flexibility training, with similar increases in range of motion when compared to performing a static stretching protocol. Static stretching, performed either before or after exercise, also does not reduce muscle soreness in healthy adults.[9] Like numerous forms of exercise, weight training has the potential to cause the breathing pattern to deepen. This helps to meet increased oxygen requirements. One approach to breathing during weight training consists of avoiding holding one's breath and breathing shallowly. The benefits of this include protecting against a lack of oxygen, passing out, and increased blood pressure. The general procedure of this method is to inhale when lowering the weight (the eccentric portion) and exhale when lifting the weight (the concentric portion). However, the reverse, inhaling when lifting and exhaling when lowering, may also be recommended. There is little difference between the two techniques in terms of their influence on heart rate and blood pressure.[14] On the other hand, for people working with extremely heavy loads (such as powerlifters), breathing à la the Valsalva maneuver is often used. This involves deeply inhaling and then bracing down with the abdominal and lower back muscles as the air is held in during the entire rep. Air is then expelled once the rep is done, or after a number of reps is done. The Valsalva maneuver leads to an increase in intrathoracic and intra-abdominal pressure. This enhances the structural integrity of the torso—protecting against excessive spinal flexion or extension and providing a secure base to lift heavy weights effectively and securely.[15] However, as the Valsalva maneuver increases blood pressure, lowers heart rate, and restricts breathing, it can be a dangerous method for those with hypertension or for those who faint easily. Training volume is commonly defined as sets × reps × load. That is, an individual moves a certain load for some number of repetitions, rests, and repeats this for some number of sets, and the volume is the product of these numbers. For non-weightlifting exercises, the load may be replaced with intensity, the amount of work required to achieve the activity. Training volume is one of the most critical variables in the effectiveness of strength training. There is a positive relationship between volume and hypertrophy.[16][17] The load or intensity is often normalized as the percentage of an individual's one-repetition maximum (1RM). Due to muscle failure, the intensity limits the maximum number of repetitions that can be carried out in one set, and is correlated with the repetition ranges chosen. Depending on the goal, different loads and repetition amounts may be appropriate:[18] Strength development (1RM performance): Gains may be achieved with a variety of loads. However, training efficiency is maximized by using heavy loads (80% to 100% of 1RM). The number of repetitions is secondary and may be 1 to 5 repetitions per set.[18] Muscle growth (hypertrophy): Hypertrophy can be maximized by taking sets to failure or close to failure. Any load 30% of 1RM or greater may be used. The NCSA recommends "medium" loads of 8 to 12 repetitions per set with 60% to 80% of 1RM.[18] Endurance: Endurance may be trained by performing many repetitions, such as 15 or more per set. The NCSA recommends "light" loads below 60% of 1RM, but some studies have found conflicting results suggesting that "moderate" 15-20RM loads may work better when performed to failure.[18] Training to muscle failure is not necessary for increasing muscle strength and muscle mass, but it also is not harmful.[19] The speed or pace at which each repetition is performed is also an important factor in strength and muscle gain. The emerging format for expressing this is as a 4-number tempo code such as 3/1/4/2, meaning an eccentric phase lasting 3 seconds, a pause of 1 second, a concentric phase of 4 seconds, and another pause of 2 seconds. The letter X in a tempo code represents a voluntary explosive action whereby the actual velocity and duration is not controlled and may be involuntarily extended as fatigue manifests, while the letter V implies volitional freedom "at your own pace". A phase's tempo may also be measured as the average movement velocity. Less precise but commonly used characterizations of tempo include the total time for the repetition or a qualitative characterization such as fast, moderate, or slow. The ACSM recommends a moderate or slower tempo of movement for novice- and intermediate-trained individuals, but a combination of slow, moderate, and fast tempos for advanced training.[20] Intentionally slowing down the movement tempo of each repetition can increase muscle activation for a given number of repetitions. However, the maximum number of repetitions and the maximum possible load for a given number of repetitions decreases as the tempo is slowed. Some trainers calculate training volume using the time under tension (TUT), namely the time of each rep times the number of reps, rather than simply the number of reps.[20] However, hypertrophy is similar for a fixed number of repetitions and each repetition's duration varying from 0.5 s - 8 s. There is however a marked decrease in hypertrophy for "very slow" durations greater than 10 s.[21] There are similar hypertrophic effects for 50-60% 1RM loads with a slower 3/0/3/0 tempo and 80-90% 1RM loads with a faster 1/1/1/0 tempo. It may be beneficial for both hypertrophy and strength to use fast, short concentric phases and slower, longer eccentric phases. Research has not yet isolated the effects of concentric and eccentric durations, or tested a wide variety of exercises and populations.[20] In general, more weekly training sessions lead to higher increases in physical strength. However, when training volume was equalized, training frequency had no influence on muscular strength. In addition, greater frequency had no significant effect on single-joint exercises. There may be a fatigue recovery effect in which spreading the same amount of training over multiple days boosts gains, but this has to be confirmed by future studies.[22] For muscle growth, a training frequency of two sessions per week had greater effects than once per week. Whether training a muscle group three times per week is superior to a twice-per-week protocol remains to be determined.[23] The rest period is defined as the time dedicated to recovery between sets and exercises. Exercise causes metabolic stress, such as the buildup of lactic acid and the depletion of adenosine triphosphate and phosphocreatine.[24] Resting 3–5 minutes between sets allows for significantly greater repetitions in the next set versus resting 1–2 minutes.[25] For untrained individuals (no previous resistance training experience), the effect of resting on muscular strength development is small and other factors such as volitional fatigue and discomfort, cardiac stress, and the time available for training may be more important. Moderate rest intervals (60-160s) are better than short (20-40 s), but long rest intervals (3–4 minutes) have no significant difference from moderate.[24] For trained individuals, rest of 3–5 minutes[26] is sufficient to maximize strength gain, compared to shorter intervals 20s-60s and longer intervals of 5 minutes. Intervals of greater than 5 minutes have not been studied.[24] Starting at 2 minutes and progressively decreasing the rest interval over the course of a few weeks to 30s can produce similar strength gains to a constant 2 minutes.[27][24] Regarding older individuals, a 1-minute rest is sufficient in females.[24] The largest increases in strength happen for the exercises in the beginning of a session.[28] Supersets are defined as a pair of different exercise sets performed without rest, followed by a normal rest period. Common superset configurations are two exercises for the same muscle group, agonist-antagonist muscles, or alternating upper and lower body muscle groups.[29] Exercises for the same muscle group (flat bench press followed by the incline bench press) result in a significantly lower training volume than a traditional exercise format with rests.[30] However, agonist–antagonist supersets result in a significantly higher training volume when compared to a traditional exercise format.[31] Similarly, holding training volume constant but performing upper–lower body supersets and tri-sets reduce elapsed time but increased perceived exertion rate.[32] These results suggest that specific exercise orders may allow more intense, more time-efficient workouts with results similar to longer workouts.[29] See also: Sports periodization Periodization refers to the organization of training into sequential phases and cyclical periods, and the change in training over time. The simplest strength training periodization involves keeping a fixed schedule of sets and reps (e.g. 2 sets of 12 reps of bicep curls every 2 days), and steadily increasing the intensity on a weekly basis. This is conceptually a parallel model, as several exercises are done each day and thus multiple muscles are developed simultaneously. It is also sometimes called linear periodization, but this designation is considered a misnomer.[33] Sequential or block periodization concentrates training into periods ("blocks"). For example, for athletes, performance can be optimized for specific events based on the competition schedule. An annual training plan may be divided hierarchically into several levels, from training phases down to individual sessions. Traditional periodization can be viewed as repeating one weekly block over and over. Block periodization has the advantage of focusing on specific motor abilities and muscle groups.

[33] Because only a few abilities are worked on at a time, the effects of fatigue are minimized. With careful goal selection and ordering, there may be synergistic effects. A traditional block consists of high-volume, low-intensity exercises, transitioning to low-volume, high-intensity exercises. However, to maximize progress to specific goals, individual programs may require different manipulations, such as decreasing the intensity and increasing volume.[34] Undulating periodization is an extension of block periodization to frequent changes in volume and intensity, usually daily or weekly. Because of the rapid changes, it is theorized that there will be more stress on the neuromuscular system and better training effects. Undulating periodization yields better strength improvements on 1RM than non-periodized training.[33] For hypertrophy, it appears that daily undulating periodization has similar effect to more traditional models.[35] Further information: Split weight training A training split refers to how the trainee divides and schedules their training volume, or in other words which muscles are trained on a given day over a period of time (usually a week). Popular training splits include full body, upper/lower, push/pull/legs, and the "bro" split. Some training programs may alternate splits weekly.[36][better source needed] Further information: List of weight training exercises Exercise selection depends on the goals of the strength training program. If a specific sport or activity is targeted, the focus will be on specific muscle groups used in that sport. Various exercises may target improvements in strength, speed, agility, or endurance.[37] For other populations such as older individuals, there is little information to guide exercise selection, but exercises can be selected on the basis of specific functional capabilities as well as the safety and efficiency of the exercises.[38] For strength and power training in able-bodied individuals, the NCSA recommends emphasizing integrated or compound movements (multi-joint exercises), such as with free weights, over exercises isolating a muscle (single-joint exercises), such as with machines.[39] This is due to the fact that only the compound movements improve gross motor coordination and proprioceptive stabilizing mechanisms.[37] However, single-joint exercises can result in greater muscle growth in the targeted muscles,[40] and are more suitable for injury prevention and rehabilitation.[39] Low variation in exercise selection or targeted muscle groups, combined with a high volume of training, is likely to lead to overtraining and training maladaptation.[41] Many exercises such as the squat have several variations. Some studies have analyzed the differing muscle activation patterns, which can aid in exercise selection. [42] Commonly used equipment for resistance training include free weights—including dumbbells, barbells, and kettlebells—weight machines, and resistance bands.[43] Resistance can also be generated by inertia in flywheel training instead of by gravity from weights, facilitating variable resistance throughout the range of motion and eccentric overload.[44][45] Some bodyweight exercises do not require any equipment, and others may be performed with equipment such as suspension trainers or pull-up bars.[46] Isometric exercise Isotonic exercise Isokinetic exercise See also: Anaerobic exercise Strength training exercise is primarily anaerobic.[47] Even while training at a lower intensity (training loads of ≈20-RM), anaerobic glycolysis is still the major source of power, although aerobic metabolism makes a small contribution.[48] Weight training is commonly perceived as anaerobic exercise, because one of the more common goals is to increase strength by lifting heavy weights. Other goals such as rehabilitation, weight loss, body shaping, and bodybuilding often use lower weights, adding aerobic character to the exercise. Except in the extremes, a muscle will fire fibres of both the aerobic or anaerobic types on any given exercise, in varying ratio depending on the load on the intensity of the contraction.[47] This is known as the energy system continuum. At higher loads, the muscle will recruit all muscle fibres possible, both anaerobic ("fast-twitch") and aerobic ("slow-twitch"), to generate the most force. However, at maximum load, the anaerobic processes contract so forcefully that the aerobic fibers are completely shut out, and all work is done by the anaerobic processes. Because the anaerobic muscle fibre uses its fuel faster than the blood and intracellular restorative cycles can resupply it, the maximum number of repetitions is limited.[49] In the aerobic regime, the blood and intracellular processes can maintain a supply of fuel and oxygen, and continual repetition of the motion will not cause the muscle to fail. Circuit weight training is a form of exercise that uses a number of weight training exercise sets separated by short intervals. The cardiovascular effort to recover from each set serves a function similar to an aerobic exercise, but this is not the same as saying that a weight training set is itself an aerobic process. Strength training is typically associated with the production of lactate, which is a limiting factor of exercise performance. Regular endurance exercise leads to adaptations in skeletal muscle which can prevent lactate levels from rising during strength training. This is mediated via activation of PGC-1alpha which alter the LDH (lactate dehydrogenase) isoenzyme complex composition and decreases the activity of the lactate generating enzyme LDHA, while increasing the activity of the lactate metabolizing enzyme LDHB.[50] Main article: Sports nutrition Supplementation of protein in the diet of healthy adults increases the size and strength of muscles during prolonged resistance exercise training (RET); protein intakes of greater than 1.62 grams per kilogram of body weight a day did not additionally increase fat–free mass (FFM), muscle size, or strength, in a non-energy restricted context.[51] Older lifters may experience less of an effect from protein supplementation on resistance training.[51] It is not known how much carbohydrate is necessary to maximize muscle hypertrophy. Strength adaptations may not be hindered by a low-carbohydrate diet.[52] A light, balanced meal prior to the workout (usually one to two hours beforehand) ensures that adequate energy and amino acids are available for the intense bout of exercise.[53] The type of nutrients consumed affects the response of the body, and nutrient timing whereby protein and carbohydrates are consumed prior to and after workout has a beneficial impact on muscle growth.[54] Water is consumed throughout the course of the workout to prevent poor performance due to dehydration. A protein shake is often consumed immediately[55] following the workout. However, the anabolic window is not particularly narrow and protein can also be consumed before or hours after the exercise with similar effects.[56] Glucose (or another simple sugar) is often consumed as well since this quickly replenishes any glycogen lost during the exercise period. If consuming recovery drink after a workout, to maximize muscle protein anabolism, it is suggested that the recovery drink contain glucose (dextrose), protein (usually whey) hydrolysate containing mainly dipeptides and tripeptides, and leucine.[57] Some weight trainers also take ergogenic aids such as creatine[58] or anabolic steroids to aid muscle growth.[59] In a meta-analysis study that investigated the effects of creatine supplementation on repeated sprint ability, it was discovered that creatine increased body mass and mean power output.[60] The creatine-induced increase in body mass was a result of fluid retention.[60] The increase in mean power output was attributed to creatine's ability to counteract the lack of intramuscular phosphocreatine.[60] Creatine does not have an effect on fatigue or maximum power output.[60] As with other sports, weight trainers should avoid dehydration throughout the workout by drinking sufficient water. This is particularly true in hot environments, or for those older than 65.[61][62][63][64][65] Some athletic trainers advise athletes to drink about 7 imperial fluid ounces (200 mL) every 15 minutes while exercising, and about 80 imperial fluid ounces (2.3 L) throughout the day.[66]:75 However, a much more accurate determination of how much fluid is necessary can be made by performing appropriate weight measurements before and after a typical exercise session, to determine how much fluid is lost during the workout. The greatest source of fluid loss during exercise is through perspiration, but as long as fluid intake is roughly equivalent to the rate of perspiration, hydration levels will be maintained.[63] Under most circumstances, sports drinks do not offer a physiological benefit over water during weight training.[66]:76 However, under certain conditions—such as prolonged training sessions lasting over an hour, or when exercising in extremely hot and humid environments—sports drinks containing electrolytes and carbohydrates may help replenish lost salts and provide an energy boost. Ultimately, the ideal hydration approach depends on the individual's training intensity, duration, and personal needs.[67] Insufficient hydration may cause lethargy, soreness or muscle cramps. [66]:153 The urine of well-hydrated persons should be nearly colorless, while an intense yellow color is normally a sign of insufficient hydration.[66]:153 The effects of strength training include greater muscular strength, improved muscle tone and appearance, increased endurance, cardiovascular health, and enhanced bone density.[68] These benefits contribute not only to athletic performance but also to long-term health and independence, especially as individuals age. Regular resistance training supports metabolic function, helps regulate body weight, and can improve mental well-being through the release of endorphins. Strength training also provides functional benefits. Stronger muscles improve posture,[vague] provide better support for joints,[vague] and reduce the risk of injury from everyday activities.[69][70] Progressive resistance training may improve function, quality of life and reduce pain in people at risk of fracture, with rare adverse effects.[71] Weight-bearing exercise also helps to prevent osteoporosis and to improve bone strength in those with osteoporosis.[72] For many people in rehabilitation or with an acquired disability, such as following stroke or orthopaedic surgery, strength training for weak muscles is a key factor to optimise recovery.[73] Consistent exercise can actually strengthen bones and prevent them from getting frail with age.[74] Engaging in strength training has been linked to a 10–17% reduction in the risk of death from all causes, including cardiovascular disease, cancer, diabetes, and lung cancer.[75] Two of its primary effects—muscle growth (hypertrophy) and increased muscular strength—are both associated with improved longevity and lower mortality rates.[76] Strength training also triggers hormonal changes that may contribute to positive health outcomes.[77] It can help lower both systolic and diastolic blood pressure,[78][79] and positively influence body composition by decreasing overall body fat, visceral fat, and fat mass.[80] These changes are particularly beneficial since excess body fat and its distribution are closely linked to insulin resistance and the development of chronic diseases.[81] Strength training also leads to various beneficial neurobiological effects – likely including functional brain changes, lower white matter atrophy,[82] neuroplasticity[83] (including some degree of BDNF expression),[84] and white matter-related structural and functional changes in neuroanatomy.[85] Although resistance training has been less studied for its effect on depression than aerobic exercise, it has shown benefits compared to no intervention.[86] Moreover, it also promotes decreases in total cholesterol (TC), triglycerides (TG), low-density lipoprotein (LDL), and C-reactive protein (CRP) as well as increases in high-density lipoprotein (HDL) and adiponectin concentrations.[87] Stronger muscles improve performance in a variety of sports. Sport-specific training routines are used by many competitors. These often specify that the speed of muscle contraction during weight training should be the same as that of the particular sport.[88] Strength training can substantially prevent sports injuries,[89] increase jump height and improve change of direction. Strength training is not only associated with an increase in muscle mass, but also an improvement in the nervous system's ability to recruit muscle fibers and activate them at a faster rate.[90] Neural adaptations can occur in the motor cortex, the spinal cord, and/or neuromuscular junctions. The initial significant improvements in strength amongst new lifters are a result of increased neural drive, motor unit synchronization, motor unit excitability, rate of force development, muscle fiber conduction velocity, and motor unit discharge rate.[90] Together, these improvements provide an increase in strength separate from muscle hypertrophy.[91] Typically, the main barbell lifts – squat, bench, and deadlift – are performed with a full range of motion, which provides the greatest neuromuscular improvements compared to one-third or two-thirds range of motion.[92] However, there are reasons to perform these lifts with less range of motion, particularly in the powerlifting community. By limiting range of motion, lifters can target a specific joint angle in order to improve their sticking points by training their neural drive. Neuromuscular adaptations are critical for the development of strength, but are especially important in the aging adult population, as the decline in neuromuscular function is roughly three times as great (≈3% per year) as the loss of muscle mass (≈1% per year).[93] By staying active and following a resistance training program, older adults can maintain their movement, stability, balance, and independence. See also: History of physical training and fitness Arthur Saxon performing a Two Hands Anyhow with an early kettlebell and plate-loaded barbell The genealogy of lifting can be traced back to the beginning of recorded history[94] where humanity's fascination with physical abilities can be found among numerous ancient writings. In many prehistoric tribes, they would have a big rock they would try to lift, and the first one to lift it would inscribe their name into the stone. Such rocks have been found in Greek and Scottish castles.[95] Progressive resistance training dates back at least to Ancient Greece, when legend has it that wrestler Milo of Croton trained by carrying a newborn calf on his back every day until it was fully grown. Another Greek, the physician Galen, described strength training exercises using the halteres (an early form of dumbbell) in the 2nd century. Ancient Greek sculptures also depict lifting feats. The weights were generally stones, but later gave way to dumbbells. The dumbbell was joined by the barbell in the later half of the 19th century. Early barbells had hollow globes that could be filled with sand or lead shot, but by the end of the century these were replaced by the plate-loading barbell commonly used today.[96] Weightlifting was first introduced in the Olympics in the 1896 Athens Olympic Games as a part of track and field, and was officially recognized as its own event in 1914.[97] The 1960s saw the gradual introduction of exercise machines into the still-rare strength training gyms of the time. Weight training became increasingly popular in the 1970s, following the release of the bodybuilding movie Pumping Iron, and the subsequent popularity of Arnold Schwarzenegger. Since the late 1990s, increasing numbers of women have taken up weight training; currently, nearly one in five U.S. women engage in weight training on a regular basis.[98] Men and women have similar reactions to resistance training with comparable effect sizes for hypertrophy and lower body strength, although some studies have found that women experience a greater relative increase in upper-body strength. Because of their greater starting strength and muscle mass, absolute gains are higher in men.[99] In older adults, women experienced a larger increase in lower-body strength.[100] Orthopaedic specialists used to recommend that children avoid weight training because the growth plates on their bones might be at risk. The very rare reports of growth plate fractures in children who trained with weights occurred as a result of inadequate supervision, improper form or excess weight, and there have been no reports of injuries to growth plates in youth training programs that followed established guidelines.[101][102] The position of the National Strength and Conditioning Association is that strength training is safe for children if properly designed and supervised.[103] The effects of training on youth have been shown to depend on the methods of training being implemented. Studies from the Journal of Strength and Conditioning Research concluded that both Resistance Training and Plyometric training led to significant improvements in peak torque, peak rate of torque development, and jump performance, with Plyometric showing a greater improvement in jump performance compared to Resistance training.[104] Another study saw results that suggest that both high-load, low-repetition and moderate-load, high-repetition resistance training can be prescribed to improve muscular fitness in untrained adolescents, as well as the jump height had also increased.[105][106] These finding can be used in the future to develop training programs for youth athletes.[104] The big takeaway from these studies is that not only in training important for the development of strength for young athletes, but also it shows that when developing a program, having both plyometrics exercise and resistance training will result in better adaptations in the short and long term.[104] This can be attributed to the effect of neuromuscular development and the principle that it comes faster for adolescents than muscular hypertrophy. Understanding this is crucial for those in charge of creating programs for the youth to avoid injury and/or overtraining.[105][106] Since adolescents are still in growing and are not done with developing not only musculature but also bone and joint structures. Younger children are at greater risk of injury than adults if they drop a weight on themselves or perform an exercise incorrectly; further, they may lack understanding of, or ignore the safety precautions around weight training equipment. As a result, supervision of minors is considered vital to ensuring the safety of any youth engaging in strength training.[101][102] Aging is associated with sarcopenia, a decrease in muscle mass and strength.[107][108][109] Resistance training can mitigate this effect,[107][109][110] and even the oldest old (those above age 85) can increase their muscle mass with a resistance training program, although to a lesser degree than younger individuals.[107] With more strength older adults have better health, better quality of life, better physical function[109] and fewer falls.[109] Resistance training can improve physical functioning in older people, including the performance of activities of daily living.[109][107] Resistance training programs are safe for older adults, can be adapted for mobility and disability limitations, and may be used in assisted living settings.[107] Resistance training at lower intensities such as 45% of 1RM can still result in increased muscular strength.[111] Endurance training

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