

THE 1X20 STRENGTH TRAINING PROGRAM FOR OLDER ADULTS

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The 1x20 strength training program can potentially build strength with the older adult client by optimizing training volume and increasing training density. The author believes the potential benefits in the older adult clients by the 1x20 program include motor learning, improved capillary action, decreased soreness, and muscular adaptation in terms of both endurance and strength. The program gives each older adult client a baseline exposure to a lot of different exercises and movement patterns and helps build the general physical preparedness of the client.

OVERVIEW OF 1X20

The 1x20 program was developed by Dr. Michael Yessis, a sports performance coach and biomechanist who has worked with a number of elite individuals applying Soviet era training methods (5). The program is designed to strengthen all the muscles and joints of the body. Once strength is achieved, it then serves as a base for more advanced exercises with greater intensity, coordination, complexity and difficulty. The objective is to target all the joints and muscle groups and their actions in an effort to develop motor learning.

The 1x20 program keeps repetitions high but intensity low. A general starting point is to have the client begin at an intensity of 50% of their one-repetition maximum (1RM) for any given exercise. Most exercises are single-joint exercises and are aimed at targeting the major muscles, minor muscles, and joints of the body. Single-joint exercises allow targeting of specific muscles and joints for more concentrated work, especially for the muscles that are underdeveloped.

PROGRESSING THE 1X20

LEVEL 1

Level 1 is the beginning stage of resistance training in the 1x20 program. The goal of this level is for the client to learn and familiarize themselves with the exercises. It is important for the client to make gradual progress so that they can acclimate their body to the exercises without soreness or discomfort. A general starting point is to have the client begin at an intensity of 50% of their 1RM for the chosen exercises.

The number of exercises used during the first cycle of training that lasts four weeks should be between 6 – 12 exercises. This will vary depending on the client's level of fitness and exercise mastery. The personal trainer should pick exercises that are easy for the client to perform and that are easy on the client's joints and muscles. After the first cycle of training, the personal trainer should introduce 2 – 4 new exercises for their client. The goal is to eventually work up to 20 exercises targeting all the muscles in the body (5). If the client can perform 20 repetitions with a given exercise for 2 – 3 consecutive workouts, then the client may

increase the resistance. The personal trainer should have their client stay in level 1 for 2 – 3 training cycles, each of which lasting four weeks until moving on to level 2.

LEVEL 2

Level 2 is an intermediate stage of resistance training in the 1x20 program. Personal trainers will continue to develop their client's foundation. Personal trainers will have their clients begin using a 1x14 approach for their exercises. Fewer repetitions will help the client gain strength while keeping a quality of endurance within their training. A general starting point is to have the client begin at an intensity of 65% of their 1RM for the chosen exercises. For this level, personal trainers should have their clients complete 2 – 3 training cycles before moving on to level 3.

LEVEL 3

Level 3 is an advanced stage of resistance training in the 1x20 program. The main distinguishing feature of this level is the addition of multiple sets for some of the exercises. The repetitions may be lowered to eight on some exercises with an increase in intensity up to 75% of the client's 1RM for the chosen exercises. With the addition of multiple sets, some exercises will need to be eliminated. The eliminated exercises should be those that have already given the client sufficient strength, and further increases are not needed at this time.

For exercises with multiple sets, 30 – 60 s of rest between sets is recommended for recovery. The client can do another exercise involving different muscles before completing a second set. Dr. Yessis discussed further levels, but these levels are likely unnecessary for the goals of the older adult population. For this level, personal trainers should have their clients complete multiple training cycles.

TRAINING PRINCIPLES

Dr. Yessis outlines several training principles in his book “The Revolutionary 1x20 RM Strength Training Program” (5). The principles that best serve the older adult population are gradualness, progressiveness, overload, awareness, and consistency. Gradualness and progressiveness are related in the fact that there will be steady progress in resistance, repetitions, and sets for the older adult client (5).

Overload means that the client does more than their body is accustomed to generally. For example, in order to develop strength, the client must add additional weight (resistance). Personal trainers can also overload the client by adding exercises or by adding sets to exercises to increase the volume.

The principle of awareness is used in two different ways. It usually refers to being cognizant of how you feel both mentally and

physically during and after an exercise. Awareness also means being cognizant of what is happening to the body during exercise. The client should learn what each exercise feels like and how the muscles are working. This allows the client to develop the muscle memory needed for effective execution (5).

Consistency is key to having older adult clients reach the goals they are striving for. An older adult client must exercise on a regular basis to reach their desired strength goals.

BENEFITS OF STRENGTH TRAINING FOR SENIORS USING THE 1X20 STRENGTH TRAINING PROGRAM

Level 1, cycle 1 of the 1x20 strength training program is effective because it starts with as little as six exercises, which would take a client as little as 20 min to complete and progresses the client to

level 1, cycle 2 with as many as 12 exercises and 40 min of strength training exercise. This can help the client rebuild lost muscle tissue.

As the older adult client progresses from level 1 to level 3, they will have had several weeks of resistance training completed starting at a low volume and low intensity and moving up to a moderate volume at a higher intensity. This helps to increase bone and muscle mass by regaining strength, fitness, and physical abilities to help them be more efficient at performing daily tasks such as walking, getting off the floor, and picking up groceries.

The United States Department of Health and Human Services recommends that all adults do some type of strength training that hits all the major muscle groups at least two times per week (4). If health or ability prevents two full sessions, the recommendation is that older adults should do as much strength training as their

TABLE 1. LEVEL 1, PHASE 1 SAMPLE PROGRAM

EXERCISES	SINGLE-JOINT OR MULTI-JOINT	PRIMARY MUSCLES WORKED	NUMBER OF SETS	NUMBER OF REPETITIONS	INTENSITY
Leg Extension	Single-joint	Quadriceps	1	20	50% of 1RM
Leg Curl	Single-joint	Hamstrings	1	20	50% of 1RM
Hip Abduction	Single-joint	Hip abductors	1	20	50% of 1RM
Hip Adduction	Single-joint	Hip adductors	1	20	50% of 1RM
Biceps Curl	Single-joint	Biceps	1	20	50% of 1RM
Triceps Extension	Single-joint	Triceps	1	20	50% of 1RM
Abdominal Flexion	Single-joint	Rectus abdominis	1	20	50% of 1RM
Low Back Extension	Single-joint	Erector spine	1	20	50% of 1RM

TABLE 2. LEVEL 1, PHASE 2 SAMPLE PROGRAM

EXERCISES	SINGLE-JOINT OR MULTI-JOINT	PRIMARY MUSCLES WORKED	NUMBER OF SETS	NUMBER OF REPETITIONS	INTENSITY
Squat to Box	Multi-joint	Quadriceps, hamstrings, gluteal	1	20	50% of 1RM
Chest Press	Multi-joint	Pectoralis major, anterior deltoids, triceps	1	20	50% of 1RM
Seated Row	Multi-joint	Latissimus dorsi, biceps	1	20	50% of 1RM
Leg Extension	Single-joint	Quadriceps	1	20	50% of 1RM
Leg Curl	Single-joint	Hamstrings	1	20	50% of 1RM
Hip Abduction	Single-joint	Hip abductors	1	20	50% of 1RM
Hip Adduction	Single-joint	Hip adductors	1	20	50% of 1RM
Biceps Curl	Single-joint	Biceps	1	20	50% of 1RM
Triceps Extension	Single-joint	Triceps	1	20	50% of 1RM
Abdominal Flexion	Single-joint	Rectus abdominis	1	20	50% of 1RM
Rotary Torso	Multi-joint	Rectus abdominis, external obliques, internal obliques	1	20	50% of 1RM
Low Back Extension	Single-joint	Erector spine	1	20	50% of 1RM

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TABLE 3. LEVEL 2 SAMPLE PROGRAM

EXERCISES	SINGLE-JOINT OR MULTI-JOINT	PRIMARY MUSCLES WORKED	NUMBER OF SETS	NUMBER OF REPETITIONS	INTENSITY
Squat to Box	Multi-joint	Quadriceps, hamstrings, gluteal	1	14	65% of 1RM
Chest Press	Multi-joint	Pectoralis major, anterior deltoids, triceps	1	14	65% of 1RM
Leg Press	Multi-joint	Quadriceps, hamstrings, gluteal	1	14	65% of 1RM
Seated Row	Multi-joint	Latissimus dorsi, biceps	1	14	65% of 1RM
Leg Extension	Single-joint	Quadriceps	1	14	65% of 1RM
Leg Curl	Single-joint	Hamstrings	1	14	65% of 1RM
Hip Abduction	Single-joint	Hip abductors	1	14	65% of 1RM
Hip Adduction	Single-joint	Hip adductors	1	14	65% of 1RM
Chest Fly	Single-joint	Pectoralis major	1	14	65% of 1RM
Reverse Fly	Single-joint	Upper trapezius, rhomboids	1	14	65% of 1RM
Biceps Curl	Single-joint	Biceps	1	14	65% of 1RM
Triceps Extension	Single-joint	Triceps	1	14	65% of 1RM
Abdominal Flexion	Single-joint	Rectus abdominis	1	14	65% of 1RM
Rotary Torso	Multi-joint	Rectus abdominis, external obliques, internal obliques	1	14	65% of 1RM
Low Back Extension	Single-joint	Erector spine	1	14	65% of 1RM

TABLE 4. LEVEL 3 SAMPLE PROGRAM

EXERCISES	SINGLE-JOINT OR MULTI-JOINT	PRIMARY MUSCLES WORKED	NUMBER OF SETS	NUMBER OF REPETITIONS	INTENSITY
Chest Press	Multi-joint	Pectoralis major, anterior deltoids, triceps	2	8	75% of 1RM
Leg Press	Multi-joint	Quadriceps, hamstrings, gluteal	2	8	75% of 1RM
Seated Row	Multi-joint	Latissimus dorsi, biceps	2	8	75% of 1RM
Leg Curl	Single-joint	Hamstrings	2	8	75% of 1RM
Hip Abduction	Single-joint	Hip abductors	1	14	65% of 1RM
Hip Adduction	Single-joint	Hip adductors	1	14	65% of 1RM
Reverse Fly	Single-joint	Upper trapezius, rhomboids	1	14	65% of 1RM
Biceps Curl	Single-joint	Biceps	1	14	65% of 1RM
Triceps Extension	Single-joint	Triceps	1	14	65% of 1RM
Abdominal Flexion	Single-joint	Rectus abdominis	1	14	65% of 1RM
Rotary Torso	Multi-joint	Rectus abdominis, external obliques, internal obliques	1	14	65% of 1RM
Low Back Extension	Single-joint	Erector spine	1	14	65% of 1RM

abilities allow (4). The 1x20 strength training program is able to meet older adults where they are. You can begin an older adult client on a couple of single-joint exercises at a light intensity (50% of their 1RM) and progress them to several exercises including multi-joint movements at a high intensity (75% of their 1RM).

THE IMPORTANCE OF STRENGTH TRAINING FOR SENIORS

By the year 2050, the United States will experience considerable growth in its older population (6). The baby boomers, who began turning 65 in 2011, are largely responsible for what has been described as the “graying of America” (3,5). This considerable demographic shift in American society has been accompanied by a coinciding change in attitudes towards physical activity across the lifespan. The idea that physical activity should be practiced regardless of age or gender has been coupled with the promotion of personal fitness in older adults (3).

For many older adults, growing older seems to involve an inevitable loss of strength, energy, and vigor. The frailty and decreased energy associated with aging (e.g., difficulty walking for distances, climbing stairs, or carrying groceries) are largely due to muscle loss. Muscle loss results mainly from inactivity (7).

Muscle strength gradually decreases from the 30th year until about the 50th year of life. In the sixth decade of life, an accelerated, non-linear decrease by 15% has been observed, and by the eighth decade, this may be up to 30% (2). This results in a substantial impairment in the sensorimotor information exchange, with a reduction in the quality of intermuscular and intramuscular coordination. Functional losses in strength and balance capacity and increasing gait uncertainties are the result. As muscle strength decreases it can also lead to falls, injuries, and chronic and degenerative illnesses (2,4).

Older adults are increasingly needing strength training more as they grow older to stay mobile for their everyday activities. With the goal of training to reduce the loss of muscle mass and the resulting loss of motor function, the 1x20 strength training program can be used to start older adults on a basic single-joint, low-intensity, low-volume program (4). Then the personal trainer can progress them into a program where they are able to incorporate multi-joint exercises with higher levels of intensity and volume to help them gain muscle mass and improve motor function.

REFERENCES

1. Baechle, T, and Westcott, W. *Strength Training Past 50. 3rd Edition*. Champaign, IL: Human Kinetics; 2-5, 2015.
2. Faulkner, JA, Larkin, LM, Claflin, DR, and Brooks, SV. Age-related changes in the structure and function of skeletal muscles. *Clinical and Experimental Pharmacology and Physiology* 34: 1091-1096, 2007.
3. Gard, M, Dionigi, R, Horton, S, Baker, J, Weir, P, and Dionigi, C. The normalization of sport for older people? *Annals of Leisure Research* 20(3): 253-272, 2017.
4. Mayer, F, Scharhag-Rosenberger, F, Carlsohn, A, Cassel, M, Müller, S, and Scharhag, J. The intensity and effects of strength training in the elderly. *Deutsches Arzteblatt International* 108(21): 359-364, 2011.
5. Yessis, M. *The Revolutionary 1x20 Strength Training Program*. Sports Training Inc; 81-94, 2014.

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