



Sample Training Plans Based on Current Physical Activity Guidelines



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Introduction

According to the 2018 Physical Activity Guidelines for Americans, adults should perform at least 150 minutes of moderate-intensity physical activity (aka endurance training) and 2 days of muscle strengthening activity (aka resistance training) per week [1]. Although not included in the current Physical Activity Guidelines for Americans, research suggests that regular mobility training may help to improve balance, reduce the risk of falling, increase efficiency of performing activities of daily living, and combat frailty in older populations (i.e., > 65 years of age) and thus should also be performed in addition to regular endurance and resistance training [2]. Unfortunately, research shows that most Americans fall well short of these recommendations [3].

Additionally, although most Americans may know the importance of regular physical activity, many do not know how to develop a comprehensive training plan. The purpose of this article is to provide simple, but effective, training recommendations for resistance (to include core), endurance, and mobility training for adults. While some of the proposed exercises may be contraindicated for specific medical conditions and/or injuries; age, by itself, is not a disqualifier [4]. As a result, the proposed training recommendations are applicable to and appropriate for adults of all ages. Even so, the volume, intensity, and/or frequency of the proposed exercises may need to be reduced or increased based on an individual's age and current level of fitness.

Resistance Training

According to Sullivan & Baker [4], resistance training is the most biologically and functionally complete method of training available. In addition to improving muscle strength and size, resistance training has also been shown to improve

aerobic capacity and body composition, as well as decrease the risk for sarcopenia and osteoporosis. Research shows barbell training to be the most effective method of resistance training for improving bone density and preventing osteoporosis [4]. In fact, only exercises that place significant axial stress on the spine (e.g., squats, standing presses, and deadlifts) have been shown to improve bone mineral density [4]. Body weight, resistance band, machines, and exercises performed sitting or lying down promote little to no improvements in bone mineral density. In terms of application, three sets per exercise is sufficient for most individuals. Perform sets of 3-5 reps per set if the primary goal is to improve strength. Perform sets of 8-12 reps per set if the primary goal is to improve size.

Core Training

Research shows the importance of regular core (aka torso) training for improving balance, performing functional tasks, and reducing the risk of falling [5]. Sit-ups are a popular method of core training, yet current research suggests that performing high volumes of sit-up training may cause damage to outer layers of the intervertebral discs resulting in or contributing to low back pain [6]. As a result, researchers now believe it may be more effective and safer to train the core isometrically [7]. In addition to training the core isometrically, it is also important to train each region of the core to prevent muscle imbalances (i.e., midline, obliques, and low back). An example of core training that is both isometric and targets each region of the core is the McGill Big Three [8].

The McGill Big 3 (Figure 1) consists of the McGill curl-up, side plank, and bird dog. Performing these three exercises regularly has been shown to help improve trunk stability and reduce injury risk by strengthening the various muscles surrounding the lumbar

spine [9],[10]. In terms of application, all three exercises of the McGill Big 3 can be performed collectively within a single session or separately with one exercise being performed in isolation. Regardless of which method is used, each region of the core

should be trained at least once per week. Six sets of 10-second holds per exercise is sufficient for most individuals. For the side plank and bird dog, this equates to three sets of 10-second holds per side (Figure 1).



Figure 1: The McGill Big Three.

Endurance Training

According to Sullivan & Baker [4] the addition of low-volume, high-intensity endurance training to resistance training results in a comprehensive training plan that addresses all general fitness attributes. Although distance running is a popular method of endurance training, research suggests that individuals who perform distance running exclusively lose muscle strength, size, and bone mineral density over time [4]. Instead of traditional distance running, Sullivan & Baker [4] recommend exercises like sled pushes or performing Tabata protocols on a cardio machine that involves both upper and lower body musculature (e.g., Airdyne bike, elliptical trainer, rower, etc.). A common Tabata protocol is 20-seconds of high-intensity work followed by 10-seconds of rest for 3-5 repetitions. Some research suggests that low-volume, high-intensity endurance training (e.g., high-intensity interval training [HIIT]) may yield more favorable effects than low- to moderate-intensity endurance training (e.g., low-intensity steady state [LISS]) on mortality and disease risk [11],[12].

However, other research suggests that frequency may be more important than intensity [13]. In terms of application, individuals should perform at least some low-volume, high-intensity endurance training weekly (e.g., 2-3 days per week) with low- to moderate-intensity endurance training being performed on the other days. Examples of HIIT include 3-5 bouts of 20-yard sled pushes or 3 sets of 3 x 20-seconds hard / 10-seconds easy with 3-5 minutes of rest in-between sets on an Airdyne bike. Examples of LISS training include 30-60 minutes of brisk walking.

Mobility Training

Regular participation in flexibility training has been long associated with potential benefits such as reduced injury potential during exercise, decreased muscle soreness following exercise, and improved athletic performance. However, current research debunks these claims [14],[15]. Additionally, other research suggests that dedicated flexibility training may not be necessary if resistance training is performed regularly and through a full range of motion [16]. As a result of these collective findings, Nuzzo

[17] recommends that flexibility training be de-emphasized in the prescription of exercise for most populations. Even though dedicated flexibility training may be unnecessary for some, most individuals would likely benefit from performing regular mobility training.

Mobility training combines aspects of flexibility, balance, and strength and plays an important role in posture as well as the ability to perform functional tasks. As a result, it is recommended

that individuals perform mobility training at least 2-3 times per week. Some examples of effective mobility exercises include the squat warm-up routine by Dr. Aaron Horschig (Squat University, 2020b) and the deep squat pose (Figure 2), aka Garland or Malasana pose [18],[21]. In terms of application, the squat warm-up routine may be better suited prior to resistance training involving the lower body lifts (e.g., squat, deadlift); whereas the deep squat pose (e.g., 3 sets of 30-second holds) may be better suited after endurance training (e.g., HIIT, LISS), (Figure 2).



Figure 2: The Deep Squat Pose.

Sample Training Plans

Provided below are some sample training plans for novice, intermediate, and advanced athletes. A novice athlete is classified as anyone with less than 6 months of resistance training

experience. An intermediate athlete is classified as anyone with between 6 months and 2 years of resistance training experience. An advanced athlete is classified as anyone with more than 2 years of resistance training experience (Table 1,2,3).

Table 1: Sample Training Plan for Novice.

Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Squat Press Deadlift			Squat Press Deadlift			
McGill Big 3			McGill Big 3			
LISS	HIIT	LISS	LISS	HIIT	LISS	LISS
Squat Warm-up *	Deep Squat Pose *		Squat Warm-Up *	Deep Squat Pose *		
* Perform the squat warm-up routine prior to strength training OR the deep squat pose after endurance training but not both.						

Table 2: Sample Training Plan for Intermediates.

Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Squat (Heavy) Bench Row		Deadlift Press Dips		Squat (Light) Incline Bench Pull-Ups †		
McGill Big 3		McGill Big 3		McGill Big 3		
LISS	HIIT	LISS	HIIT	LISS	LISS	LISS
Squat Warm-Up *		Squat Warm-Up *		Squat Warm-Up *	Deep Squat Pose *	
Squat (Heavy) = 85-90% of 1 Repetition Max (RM); Squat (Light) = 75-80% of 1RM						
† Lat pull-downs or machine-assisted pull-ups (e.g., Gravitron) can be performed in lieu of body weight pull-ups.						
* Perform the squat warm-up routine prior to resistance training OR the deep squat pose after endurance training but not both.						

Table 3: Sample Training Plan for Advanced.

Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Bench Row Press Asst.	Squat Pull-Up † Deadlift Asst.		Press Row Bench Asst.	Deadlift Pull-Up † Squat Asst.		
Midline	Low Back		Oblique	Low Back		
LISS	LISS	HIIT	LISS	LISS	HIIT	LISS
	Squat Warm-up *	Deep Squat Pose *		Squat Warm-up *	Deep Squat Pose *	
Asst. = Assistance Exercises. When selecting an assistance exercise, pick one that helps to develop requisite strength, mobility, or work capacity for the assigned compound lift.						
Midline = Hanging Knee Raises / Oblique = Single-Arm Suitcase Hold / Low Back = Back Extensions						
† Lat pull-downs or machine-assisted pull-ups (e.g., Gravitron) can be performed in lieu of body weight pull-ups.						
* Perform the squat warm-up routine prior to lower-body resistance training OR the deep squat pose after endurance training but not both.						

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