BARBELL MEDICINE

BODYBUILDING TEMPLATE

""No man has the right to be an amateur in the matter of physical training. It is a shame for a man to grow old without seeing the beauty and strength of which his body is capable."- Socrates

Published June 20, 2020 by Barbell Medicine
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Bodybuilding Template Overview

Welcome to the Barbell Medicine Bodybuilding Template. At Barbell Medicine, our mission is to promote improvements in health, performance, and quality of life by bringing the best of modern medicine together with strength, conditioning, and nutrition.

This eBook serves as an explanatory guide for accompanying templates, while also providing additional information on programming theory, dietary interventions, and more!

We thank you for your business and hope that you find the recommendations, explanations, and other materials useful. **Before you head off to the gym, please read the Overview section below.** Thanks again and happy training!

How To Download

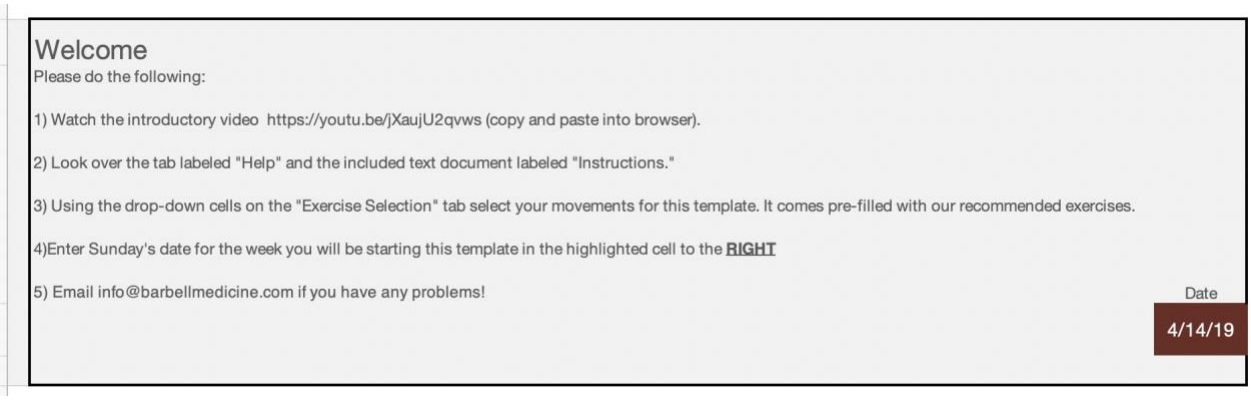
1. Using the link included in your email receipt (make sure to check the spam folder if you don't see it), download the zip file onto your computer. Some phones and tablets will allow you to unzip a ".zip" file, however we cannot guarantee that this will work 100% of the time. We recommend using a desktop or laptop computer to unzip the file.

2. Within the zip file you should have an instruction manual and at least one template. Some zip files contain multiple templates, i.e. a kilogram and pound-based template in many cases, or a number of different templates in the Master Bundle download.

3. We recommend duplicating the template you're planning on using and saving it under a new name. We also recommend saving the templates you just downloaded in a safe and secure location so you have fresh one ready to go in future.

4. All of our templates are designed to be used in Microsoft Excel. They will also work using the "Google Sheets" application on Android and Apple products. Below are some links to these items:
    a. Online version of Microsoft Excel
    b. Desktop version of Microsoft Excel
    c. Google Sheets

5. Open the template and head to the first tab, which is located all the way to the left at the bottom of the screen. In the red cell, F5, enter Sunday's date of the week you're going to start the template.



Who should use this template?

This template is primarily aimed at two groups of people:

1. Individuals who have been training for **6 months or more**, who are looking to prioritize gaining muscular size. If someone is relatively new to training, we'd recommend completing our Beginner Template or Prescription first.

2. Individuals who have been focused on strength, e.g. they've been running a powerlifting-type program or similar, **who are looking to break up their training for 4-6+ weeks with a size-focused program.**

While similar to our hypertrophy templates, the Bodybuilding Template includes more isolation work, more training volume, and some advanced techniques designed to maximize muscular hypertrophy. That said, it is likely that some individuals will actually respond better, e.g. gain more muscle, to some of our other programs, given that there are large differences in how individuals respond to a given program. However, these templates and accompanying text serve as a guide for prioritizing muscular size.

Finally, these templates can be ran in either a calorie surplus (e.g. weight gain) or deficit (e.g. weight loss) depending on goals. See the nutrition section of this document for further discussion here.

Program Structure

Overview

There are three 6-Week templates included in the .zip file. These templates, e.g. Bodybuilding I, II and III, each representing a single training mesocycle or block of training. In general, we'd recommend individuals starting with the Bodybuilding I before graduating to the Bodybuilding II and, similarly, completing Bodybuilding II before Bodybuilding III.

In each mesocycle, the weekly program includes both resistance training and aerobic conditioning in order to both increase muscular size and meet the current exercise guidelines for health purposes. Specifically, each week includes:

1. Four days of resistance training involving three to six exercises per day. Over the course of the training week, all the major muscle groups are hit with what we predict is the correct amount of volume, intensity, and frequency, to drive muscular hypertrophy. These workouts are ideally performed on a two-on, two-off schedule, e.g. M/T/R/F or T/W/F/Sat. However, if you have to schedule training days differently than this, that's okay – and certainly better than not training at all!

2. Two days of conditioning. The Bodybuilding Template gradually introduces the trainee to aerobic and anaerobic conditioning elements over time to improve cardiorespiratory fitness, work capacity, and to help with reducing body fat.

3. One or two days of recommended arm and ab work. The Bodybuilding Template includes additional trunk (e.g. abs) and arm work to compliment the rest of the training program, which requires substantial contribution of the trunk and arm muscles, but do not target them directly.

With these features, the Bodybuilding Template contains **three blocks** of programming that can be run in isolation, e.g. one block at a time between other programs, or in succession, e.g. one-after-another. In the latter scenario, the individual can run this program for extended periods of time as long as the trainee is continuing to demonstrate a trend of improvement.

The **first block** of training begins with the *moderate* training intensity, and relatively low training volume that builds up over the course of the first

three weeks as the individual acclimates to the workload. The goals of this phase are to 1) increase muscle size, 2) develop proficiency with the use of RPE across a variety of repetition ranges, and 3) build work & recovery capacity to improve *tolerance* for training as the workloads increase.

The **second block** of training starts with a "deload" or "low stress" week to facilitate recovery from the accumulated fatigue of phase 1. From there, this phase includes *higher* training intensities, *further* increases in training volume, and some advanced training techniques like supersets. The goals of this training block are similar that of the first.

The **third block** of training similarly starts with a "deload" or "low stress" week to facilitate recovery from the accumulated fatigue of block 2. From there, this phase includes additional opportunities for exercise variation as well as a wider mix of training intensities, repetition ranges, and advanced training techniques like pre-exhaustion, drop-sets, etc. The goals of this training block are similar that of the first and second.

It should be noted that, in contrast to many other "bodybuilding" programs in existence, this approach is purposefully NOT designed with the intent of overwhelming a trainee with volume or completely ignoring strength work of any kind. Rather, the program is built around a core of compound lifts, with progressively greater exposure to training volume, advanced training techniques, and isolation work.

Designing the Bodybuilding Template

Our goal with this template is to provide the user with a program that prioritizes an increase in lean body mass, while also meeting the current exercise guidelines for aerobic training.

Lean body mass (LBM) is defined as all fat-free mass (FFM). Said differently, LBM includes muscle tissue, bone, organ tissue, water, and *anything that is not fat*. The amount of muscle tissue carried by an individual is of principal concern from both health and performance perspectives.

In adults, hypertrophy is the main process by which skeletal muscle size increases. Net hypertrophy occurs when muscle protein synthesis exceeds muscle protein breakdown for **sustained periods of time**. Unfortunately, many misinterpret this idea and suggest that small changes in short-term muscle protein synthesis and/or breakdown are important, despite this not being supported in the literature. In other words, short-term fractional protein synthesis, a measure of MPS, is not correlated with hypertrophy.
Mitchel 2014

With respect to health, the amount of muscle mass an individual carries has been positively correlated to both longevity and function. In other words, folks who carry more muscle mass tend to live longer and have better performance as they age. For example, sarcopenia is a progressive and generalized skeletal muscle disorder characterized by loss of muscle mass, muscle function, and low physical performance. Cruz-Jentoft 2019 This is estimated to affect about 10-20% of older adults and is associated with increased likelihood of adverse outcomes including falls, fractures, physical disability and death. Needless to say, increasing muscle mass is important to prevent sarcopenia and health complications related to poor physical performance.

In the context of *performance*, muscle size – also described as muscle cross- sectional area – is one of strongest correlates of strength and power in trained individuals. A larger muscle offers more *potential* force production compared to a smaller muscle and this holds true regardless of sex, race, and age. Taber 2019 That said, strength is specific to a number of factors influenced by training and a bigger muscle magnifies these adaptations.

While the current evidence on longevity and disease prevention makes a strong case for improving strength, increasing lean body mass, reducing excess fat mass, and improving cardiorespiratory fitness, there is no evidence that strength in specific movements or rep ranges, e.g. a 1- rep max back squat, provide any unique health benefits compared to other movements, save for being able to perform a heavier 1RM back squat. In line with this sentiment, the current physical activity guidelines pertaining to resistance training recommend. "8 to 10 exercises for the major muscle groups, performed on 2 or more nonconsecutive days/week, using a resistance such that 8 to 12 repetitions result in volitional fatigue." Wescott 2009 In other words, a bodybuilding-type program using a wide variety of different exercises is likely to **meet or exceed** the current physical activity guidelines for resistance training.

With that said, we fully admit that there is no single "best" program for *all* trainees, as personal preferences, attitudes, genetics, previous training, resources to train, and a wide number of other factors will influence an individual's response to -- and willingness to participate in -- any program. In short, these programs and accompanying materials are designed to serve as both a framework and practical example of how-to priortize an increase in lean body mass, while also meeting the current exercise guidelines for aerobic training.

Programming for Hypertrophy

Muscle size changes in response to training by becoming larger (hypertrophy) or smaller (atrophy). The main programming variables that determine muscular hypertrophy are as follows Morton 2019:

Mechanical Loading - during human movement, muscles create force to control body movements. This force, known as *mechanical tension,* is essential for muscle growth. In short, if a muscle is not required to create force, it is unlikely to grow. Schoenfeld 2010 That said, we should not conflate the creation of mechanical tension with muscle excitation, e.g. motor unit recruitment. For example, stretching a muscle creates tension, but does not require motor unit recruitment in the muscle being stretched. Recent human data showed that individuals following 6 weeks of static stretching, but no other exercise, increased the size of their calves. Simpson 2017 That said, it is unlikely that hypertrophy will be maximized without motor unit recruitment.

Motor Unit Recruitment – Muscular force, e.g. tension, is produced by muscle fibers receiving an electrical signal to contract. The group of muscle fibers that receive the electrical signal from a single motor neuron is called a motor unit. Each muscle group has a *pool* of motor units that are recruited in order to produce force. At any given muscle length, movement velocity, and contraction type, muscles modulate force production by altering either the amount of motor units being recruited and/or the frequency at which the signal to contract is sent to the muscles.

While it may seem logical that heavier loads require more motor unit recruitment than lighter loads, recent evidence suggests that during dynamic movements, most motor units are recruited similarly during both light (<50% 1RM) and heavy (>85%) efforts. Potvin 2017 For example, a study by van den Tillaar showed that there was similar activation of the quad muscles when doing single repetitions at loads ranging from 50% to 90% of a 1RM squat. van den Tillaar 2019 Rather, the major difference between lighter and heavier efforts does not appear to be the amount of muscle mass used, but rather how frequently they get the signal to contract, which is known as *rate coding*. Potvin 2017 Finally, the force production capacity of a muscle at a specific length, velocity, and contraction type is related to the cross sectional area of the muscle, e.g. the size of the muscle fibers in the motor units being recruited or hypertrophy. Jones 2012

It should be noted that increases in rate coding occur at light weights when the set approaches failure, however the adaptations secondary to this increase in rate coding tend to be related to sustaining force

production for longer periods of time, e.g. stamina and endurance, compared to maximal force production. Vila-Cha 2010

As mentioned above, motor unit recruitment is about the same across different loading ranges, though the frequency in rate coding increases the heavier the weight is or the closer to failure one gets. Thus, provided that individuals are training to somewhere near failure, e.g. ~4-5 Reps in Reserve or less, the amount of motor unit recruitment and frequency are sufficient to drive hypertrophy equally. This is bolstered by a recent meta-analysis by Schoenfeld *et al.* that included 21 studies comparing low-load to high-load resistance training, which found that hypertrophy outcomes were about the same in either scenario. Schoenfeld 2017

Range of Motion - increasing the range of motion tends to require the involvement of more muscle mass compared to movements with less range of motion. Newmire 2018 Additionally, increasing the stretch of the muscle by using a larger range of motion tends to impart increased mechanical loading on the muscle, which appears to be additive to the muscular tension required to complete an exercise. Schoenfeld 2010 With that said, partial range of motion exercises still produce hypertrophy, although it tends to be in less muscle mass overall and atrophy more quickly during periods of detraining. McMahon 2013

Metabolic stress - Resistance training primarily involves anaerobic glycolysis to create energy (ATP). This results in the buildup of metabolic byproducts such as hydrogen ions, inorganic phosphate, creatine, lactate, and others. When the muscles are required to create force repeatedly in an anaerobic environment, more and more metabolic byproducts are generated. Numerous studies show that increased concentrations of these byproducts signal anabolic pathways in skeletal muscle, thus driving muscular hypertrophy. Goto 2005 Smith 1995

Muscle Damage - From an anatomy standpoint, muscles are composed of many muscle fibers, which are grouped together in bundles called fascicles. Additionally, every muscle fiber is composed of many myofibrils - the contractile proteins of muscles. Exercise that causes damage to these contractile proteins, such as resistance training of sufficient load carried out through an adequate range of motion, stimulates hypertrophy of the muscle by recruiting satellite cells to the damaged area(s). Evans 2002 Bazgir 2017 These satellite cells, which can be thought of as muscle stem cells, help regenerate damaged fibers and are ultimately incorporated into the damaged myofibrils as new myonuclei, where they can participate in muscle protein synthesis and repair processes. Ultimately, this helps the muscle fiber grow larger and return to normal function.

Training Volume - In resistance training volume can be defined as the total amount of reps performed, e.g. the product of sets and reps. In general, muscular hypertrophy has been shown to have a dose-dependent relationship with training volume. Schoenfeld 2019 In other words, higher doses of training volume tend to result in greater amounts of hypertrophy, to a point. Based on the factors described so far, this shouldn't be surprising, as more volume requires the muscles undergo more loading, more motor unit recruitment, and more metabolic stress.

There is a caveat however, as the amount of total training stress must be tolerable by the individual so as not to outstrip their recovery resources. This is shown in research where the majority of hypertrophy occurs after the first 4-6 weeks, rather than earlier on in untrained individuals. Damas 2015 DeFreitas 2011 Green 1999

Genetics – Individuals respond to training in a non-uniform way, as some trainees see huge gains (so-called "high responders") and others see little to no improvements (so-called "low" or "non-responders") in response to a given training program. The genetic makeup of an individual has a strong influence on how they will respond to a given anabolic stimulus, e.g. resistance training and protein intake. Current research estimates that genetic differences account for approximately 50% of the variance in training response amongst individuals, while other biological, psychological, and social factors help to explain the remaining 50%.

In short, we do not expect that a given training program will work "well" for every individual. Rather, we predict that there will be a large variation in training responses if a large population was put on the same training program. Unfortunately, there are no genetic tests currently available that can reliably predict what type of training that an individual will or will not respond to. We therefore do not focus on specific genetic differences when considering training recommendations. Instead, we recommend regularly assessing progress on a given program and making changes based on this response and on established training principles.

Thus, in order for an exercise to be a viable candidate for promoting hypertrophy, it should mechanically load the desired muscle group(s), use a relatively large range of motion through both concentric and eccentric contractions, and tolerate higher exercise volumes performed to near failure.

Exercise Selection

In order to make resistance training more accessible to the general

population, the Bodybuilding Template allows users to **pick their own exercises** based on personal preference, goals, and equipment availability. Here's how to do it:

1. Select the tab at the bottom of the screen titled "Exercise Selection" (If you do not see this tab, it is because the template you purchased is designed in a particular way that we feel is optimal for its intended use.)
2. Use your mouse to click the small gray arrow in a box pointing downwards to show you the options you can choose for that particular exercise slot.
3. Click on the variation you'd prefer.
4. Please select variations for all the available cells.

From a coaching perspective, the exercises selected should maximize both adherence to the program and fitness adaptations while minimizing the risk of injury. Adherence is likely improved by self-selected exercise type, though there is also evidence for improved adherence with self-selected intensity, i.e. the load in resistance training or the pace in aerobic exercise. Baz-Valle 2019 Williams 2008 An additional well-known component for long-term behavioral change is to try and build a person's self-efficacy, e.g. an individual's belief in their ability to do something through perseverance and determination. Neupert 2009

We can also reduce the risk of injury by increasing exercise variation, e.g. the number of different exercises performed by the individual. This is supported by the the Long-Term Athletic Development Model (LTAD) for youth athletes and evidence across multiple sports that early specialization is associated with an increased risk of injury (particularly among youth athletes), as well as with poorer long-term performance outcomes. Ford 2011 Post 2017 Bell 2018

Thus, we can generate some criteria to follow when

1. The totality of the exercises included in a program should load all major muscle groups of the body.
2. The range of motion for included exercises should be relatively large when possible.
3. Exercises should allow for increases in training volume over time, which may vary based on the individual.
4. Exercises should allow for a wide variety of different loading protocols that allow the individual to get near failure in different repetition ranges.
5. Exercises should be selected based on existing resources such as training time and equipment availability.
6. For strength, exercises should be relatively specific to the test with respect to movement and bioenergetic characteristics, but also include related variations.

7. The individual's preferences for certain exercises should be taken into account whenever possible.

The Bodybuilding Templates comes pre-programmed with our recommended programming. We suggest users run the "default" program first or only change exercise variations they don't have the equipment for or cannot perform.

Nutrition and Supplementation

Dietary Management

Energy balance and dietary protein intake can have a large influence on muscle mass. For example, low calorie and dietary protein intake can produce large, rapid losses in muscle mass when combined with medical conditions that require hospitalization and/or bedrest. In a healthy population, muscle mass increases tend to occur slowly over time provided adequate anabolic stimuli are provided.

It is possible to lose body fat and gain muscle mass at the same time, particularly in individuals who are overweight or obese, those who are new to training, and those with above-average genetics with respect to hypertrophy responses. For example, it is not unusual to see a beginner increase the circumference of their arms, legs, and shoulders while seeing a simultaneous decrease in their waist circumference. Taken together, this indicates an increase in muscle mass and a decrease in fat mass and this finding has been repeated numerous times in the scientific literature.

That said, we don't yet know if muscle mass gain is greater in a positive energy balance (e.g. caloric surplus) than at maintenance. Slater 2019 For example, a study on elite athletes completing a 4-days per week training program were split into two groups, one with a modest surplus (~200kCal) and one with a larger surplus (~600kCal). After 3 months, they both gained about the same amount of LBM, ~1.5kg, with no statistically significant differences between the groups. Garthe 2012

In short, there are still many knowledge gaps that persist in this space, such as how much does it actually cost metabolically to build and support new muscle, can this energy "surplus" come from stored body fat, etc.

All this is to say, it's complicated. We know that straightforward, concrete answers are preferred when answering questions like this, however that's not really possible at this time. Rather, our recommendations for dietary management based on the current scientific evidence are as follows:

1) Individuals whose have a waist circumference that **exceeds** the current cut-points indicating a higher risk of adiposity-related chronic disease, e.g. 37" for men and 31" for women, would likely benefit from losing fat mass via a calorie restricted diet. This also applies to individuals with a Body Mass Index of 30 or greater and/or the presence of an adiposity-related chronic disease such as high blood pressure, type II diabetes mellitus, insulin resistance, cardiovascular disease, non-alcoholic fatty liver disease, etc. A modest deficit of -250-500 kCal is reasonable with a goal of losing 2.5% bodyweight per month. *For reference, we are using these lower waist cut points given the existing data correlating them to adiposity-related chronic disease risk, despite the current Obesity guidelines using 40" and 34" for men and women, respectively.*

2) Individuals whose have a waist circumference that is **borderline exceeding** the current cut-points indicating a higher risk of adiposity-related chronic disease, e.g. 37" for men and 31" for women, would likely benefit from losing fat mass via **either** a calorie restricted diet or a maintenance diet, given that they may be able to decrease fat mass and gain muscle mass simultaneously. For reference, this borderline range is ~ 35-37" for waist circumference for men and 29-31" for women.

3) Individuals whose have a waist circumference that is **below** the borderline cut points and who are free from adiposity-related chronic disease that desire increases in lean body mass may are likely to benefit from a modest calorie surplus, e.g. adding 250-500 kCal to their daily intake. The increase in Calories should be predominantly carbohydrates and/or fats, depending on personal preference.

Building a Diet

There are many dietary patterns that promote lean body mass gain, fat loss, and overall health. Ultimately, the pattern should reflect individual preferences and goals in order to bolster adherence. That said, the following represent our current guidelines for constructing a diet:

1) Total daily Calorie intake should achieve healthy body fat and muscle mass levels, while also supporting appropriate amounts of physical activity. Vegetarian and vegan approaches can be utilized based on individual preferences, as vegans and vegetarians tend to eat an average of 600 and 263 fewer Calories per day compared to those who eat both plants and meat, respectively. Clarys 2014 We recommend using the NIH Bodyweight Planner to determine the calorie intake needed to maintain body weight. Calories should be adjusted as described above by reducing or adding

carbohydrates and/or fats.

2) Total dietary protein intake should fall between **1.6-3.1 grams per kilogram body weight per day**, unless medically contraindicated. Those who are gaining or maintaining weight should aim for the lower to middle-range, whereas those who are losing weight and/or who have risk factors for anabolic resistance may aim for the middle to upper range. For those able to consume protein within this range, we are not concerned about animal/marine versus plant sources of protein, as plant protein sources appear to be equivalent to animal protein sources when dosed at this level. In contrast, this distinction may have more relevance for individuals needing to consume a protein-restricted diet. Babault 2015, Joy 2013, Hartman 2007
3) **Daily carbohydrate and fat intake are mostly matters of personal preference**, however with respect to gaining lean body mass there is some evidence that low carbohydrate diets don't do quite as well as diets with more carbohydrates. With that in mind, we recommend **2-8 grams of carbohydrates per kilogram bodyweight per day for individuals who do not prefer low-carbohydrate diets, depending on individual needs**. Individuals who are in a calorie restricted state and/or who prefer low carbohydrate diets will be eating substantially less carbohydrates per day.
4) **Total dietary fiber intake should be at least 25-30 grams per day, ideally sourced from vegetables, fruits, and complex carbohydrate sources**. Reynolds 2019 We recommend eating as many servings of fruits and vegetables as is consistent with the total calorie and protein goals mentioned above. Fiber intake may also mitigate some of the potential negative effects of a diet high in saturated fat. Wallstrom 2012
5) **Dietary fat intake should be primarily unsaturated, e.g. from marine and plant sources, with saturated fat limited to approximately 10% or less of total Calories**. There is no recommended minimum or maximum dietary fat intake provided these other guidelines are met, however a good rule of thumb is to consume ~20-30% of their daily calorie intake from dietary fat, or 0.5-2 grams of fat per kilogram bodyweight per day, depending on needs . When replacing saturated fat with other nutrients, we recommend foods rich in PUFA, MUFA, or complex carbohydrates depending on an individual's preferences, Calorie goal, and individual response to the diet. This recommendation is strongest for those at elevated cardiovascular risk. With respect to red meat, the current recommendation of limiting intake to 12-18 ounces of cooked red meat per week is reasonable, although we feel less strongly about this if the other criteria above are being met.
6) **Processed red meat should be limited to less than 1.7 ounces (50 grams) per day.**
7) **Nutrient timing is only of minimal consideration** in the context of long-term dietary patterns. That said, it is reasonable to recommend consuming a moderate dose of protein (e.g. 20-40g of protein) within a meal every 3-5 hours, provided other guidelines are met. Kersick 2017

Supplements

In the context of an individual who is otherwise meeting the dietary goals described above, we do not routinely recommend dietary supplements to improve health. With respect to performance, there are a handful of dietary supplements that may improve training outcomes such as hypertrophy, strength, and cardiorespiratory fitness in individuals participating in properly-structured exercise programs.

Supplements that currently have evidence supporting their use include:

1) Protein supplements, e.g. whey protein, pea protein, and others. Ideally, these are used to meet the protein recommendations described above.
2) Creatine monohydrate- dosed at 0.05g/kilogram bodyweight per day
3) Beta alanine- dosed at 6g/day.
4) Caffeine – dosed at 3-9 mg/kilogram bodyweight taken ~30 min prior to exercise based on individual tolerance, preferences, and other factors.

There are many other supplements that have been evaluated for efficacy, some showing potential benefit and others showing none. We refer you to the latest International Society of Sports Nutrition review on supplements to aid in making further supplementation decisions.

Unfortunately, many supplements are manufactured in environments where contamination, improper dosing, and other less than desirable outcomes occur. For that reason, we recommend that individuals who choose to use supplements select only those who have received both the *Certificate of Good Manufacturing Process (cGMP)* and *Informed Consent/Informed for Sport* (or similar) designations. All of the supplements sold by Barbell Medicine meet these standards and there are a few other manufacturers doing the same.

Progression

Measuring Progress

Progress can be measured in a number of ways depending on what outcomes are important to the individual trainee. This might be **strength**, **hypertrophy** (i.e., increases in muscle size), **conditioning/endurance**, or some other goal entirely. However, for this particular application with individuals who are focused on muscular hypertrophy, we think that using **anthropometric measurements** and tracking **week-to-week strength progress** gives us the best indications of how well the program is working

for an individual.

Anthropometric Measurements

Anthropometry is the scientific study of the measurements and proportions of the human body. In order to measure muscle growth and body composition changes, we can track the following using a tailor's measuring tape:

Waist Circumference is quick, low-cost piece of data that strongly correlates with body fat and health outcomes like premature death, diabetes, heart disease, stroke risk, and more. To measure, stand up straight and feel for the most superior (e.g. highest) and lateral (e.g. outside) aspect of the anterior (e.g. front) hip, which is the *anterior superior iliac spine* (ASIS). Then, place a measuring tape around the area just above that bony projection- taking care to keep the tape level to the floor. Pull the tape taught, but don't let it compress into your skin, and take the measurement. Take care not to suck in or protrude your stomach but don't let it compress into your skin. For more detail on how to measure the waist, see here.

We discuss more about waist circumference "cut offs" and make some suggestions about these pertain to dietary strategy in the nutrition section above. Overall, we'd like to see the waist circumference trends depending on the dietary strategy:

- **If a person is in a calorie deficit,** we'd like to see their waist **decrease.**
- **If a person is maintaining their weight,** we'd like to see their waist **decrease or stay the same.**
- **If a person is in a calorie surplus,** we'd like to see their waist **maintain** or **only go up slightly over time.**

Thigh Circumference should be taken at the mid-point between the hip and knee, e.g. the *middle of the thigh* with the individual standing upright. The leg being measured should be just in front of the other leg, with the weight shifted to the back leg. Pull the tape taught, but don't let it compress into your skin, and take the measurement. Measure both sides.

Overall, changes in thigh circumference will depend on a person's responsiveness to the training program and their dietary strategy. In general, if someone is gaining muscle mass, we'd expect an increase in thigh circumference. If someone is losing body fat, but retaining the majority of their lean body mass, we'd expect their thigh circumference to stay the same. Practically speaking, if a person is gaining weight and their thigh circumference is not increasing- they're probably not gaining that much muscle in their legs. Conversely, if a person is losing weight and their thigh circumference is staying the same, it is likely they're maintaining a substantial amount of muscle mass

despite reducing their body fat.

Arm Circumference should be taken at the mid-point between the shoulder and elbow joints, e.g. the *middle of the arm* with the arm hanging straight up and down and the individual in the standing position. Pull the tape taught, but don't let it compress into your skin, and take the measurement. Measure both sides.

We would expect similar changes in both the arm and thigh circumferences depend on a person's responsiveness to the training program and their dietary strategy, which is discussed above.

Strength Measurements

In order measure week-to-week strength progress, we'll use a combination of **qualitative** (i.e., *descriptive*) and **quantitative** measures. Increases in strength over time tend to be a good sign that a muscle or muscle group is responding well to training. That said, increases in size- the goal of these templates- can occur in the absence of strength performance increases due to the complex nature of strength.

Strength is force production that is measured in a specific context. For example, a powerlifter completing a heavy 1-Rep-Maximum (1RM) squat is displaying force production in one context, e.g. maximal strength, whereas a marathoner is displaying force production in much different context, e.g. strength endurance. While there are other types of strength, e.g. high-velocity or explosive strength, the common ground shared by all includes both force production and a specific context.

Strength's specificity is best explained by the Specificity of Adaptation to Imposed Demands (SAID) Principle, which posits that the greatest fitness adaptations produced from training will be specific to the stimulus applied by the training. In other words, each exercise specifically stimulates adaptations for a particular energy system, muscle or muscle group, movement pattern or pattern(s), range of motion, joint angle, muscle position, movement velocity, etc. Thomas 2009 What's more, is that each muscle has a maximum force production capacity that occurs at a specific position, length, movement velocity, contraction history, etc. Herzog 2004 Thus, strength is specific to a host of different variables that must be accounted for when assessing if an individual is getting stronger and picking exercises in order to do so.

For example, gaining muscular size in the legs using exercises that are **not similar** to the way "leg strength" is going to be tested, e.g. using leg extensions and leg press primarily in training and testing a 1-Rep-Maximum (1RM) squat, don't tend to correlate as well when lifters gain

muscular size using squats.

In any case, the correlation between muscle cross sectional area and muscular force production is pretty strong, but it's not a complete slam dunk in all cases. Ahtiainen 2016 Taber 2019 Some people claim that this is due to the difference between *sarcoplasmic* (e.g. non-contractile components of the muscle) and *myofibrillar* (e.g. contractile muscle proteins) hypertrophy. In the case of sarcoplasmic hypertrophy, the increase in muscle cross sectional area occurs from a disproportionately greater increase in non-contractile protein. Conversely, the increase in muscle cross sectional area from myofibrillar hypertrophy occurs due to a disproportionately greater increase in contractile proteins. For reference, muscle tissue about 75% water, 10-15% contractile fibers, and 5% non-contractile (or sarcoplasmic) proteins. Vann 2020

At present, there is some evidence that higher volume training promotes a bias towards sarcoplasmic hypertrophy to a greater extent compared to higher load training. Vann 2020 That said, the long-term implications of these findings isn't terribly clear. For example, it has been proposed that the acute increases in sarcoplasmic hypertrophy may be training-induced swelling (edema), a transient mechanism for muscle growth, or a "primer" for myofibrillar growth where the increased sarcoplasmic component *allows* for my myofibrillar accumulation. Roberts 2020

All in all, it's not really possible to say at this time what the role of sarcoplasmic hypertrophy is (or isn't), however we do still expect strength to trend up over the medium to long-term provided we're evaluating strength using exercises similar to those seen in training.

Quantitatively, we'll use the ***absolute weight on the bar***. For example, squatting 275 pounds for a set of 5 repetitions would represent the quantitative metric for that performance.

For the *qualitative* component, we'll use the ***Rate of Perceived Exertion***, or **RPE**. This descriptive component provides important additional information about *how hard* a particular performance was. For example, that same 275 pound squat set may have been a maximum-effort set near failure, or it may have been a relatively fast, "easy" set. The difference between these two performances is important, and is not captured by exclusively focusing on the bar weight alone. Similarly, if the trainee squats 275 pounds with relative ease on week 1, but 280 pounds is an extremely difficult, maximum effort set on week 2, the lifter is probably *not* stronger on week 2, even though they lifted more absolute load. This is where adding this qualitative metric can help us differentiate these

situations for a more accurate view of training progress.

Rather than simply using vague labels of "easy" or "hard", for the purposes of resistance training, RPE can be rated on a 1-10 scale, with 1 being a very light effort and 10 being a maximal effort (Figure 1).

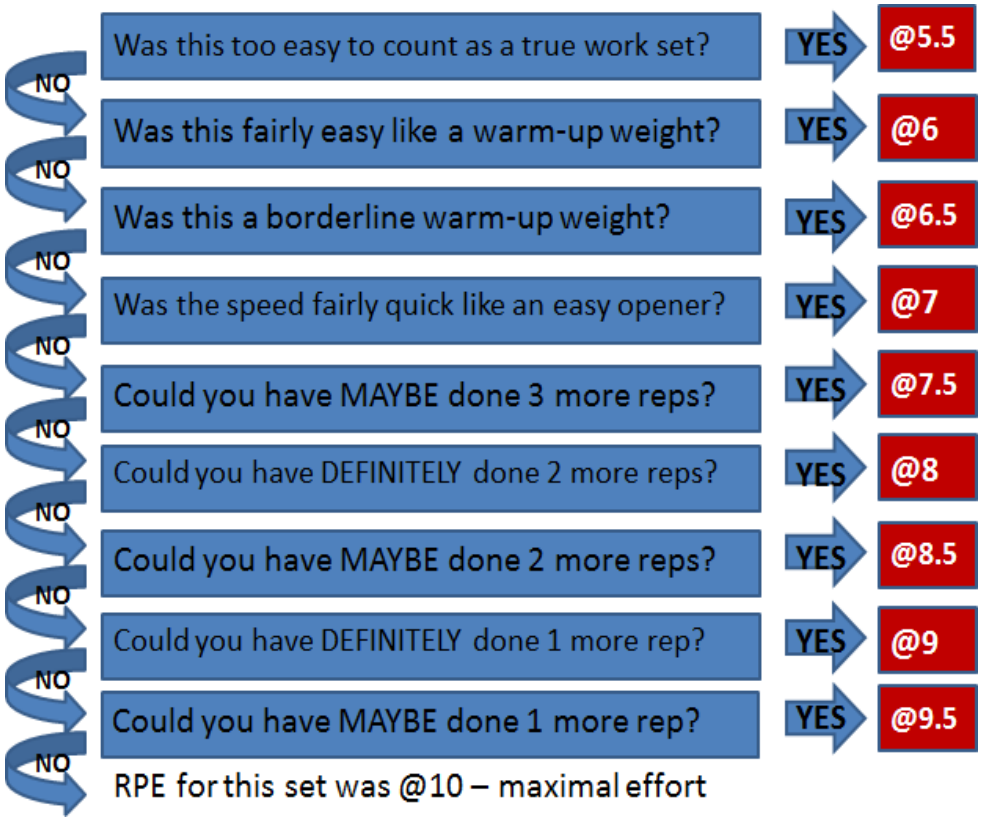


Fig. 1- RPE Chart. The red boxes on the right side of the image represent the RPE rating.

Researchers have adapted a similar metric known as ***Repetitions in Reserve***, or **RIR**, which represents an estimate of the number of repetitions away from failure in a given effort. For example, after completing the squat set of 275 pounds for 5 repetitions, the lifter might estimate that they could not have done another rep (i.e., RIR 0 = RPE 10 = maximum effort), or it may have moved easily enough that they estimate another 3 more repetitions could have been performed before failure (i.e. RIR 3 = RPE 7). **A common mistake lifters make with this tool is obsess over "perfect" accuracy. However, it is much more important to use it *consistently* than it is to have perfect accuracy from the very beginning.**

We understand that introducing this concept to guide loading can be challenging or intimidating for the new lifter; however, our experience

and the current research suggests that most individuals can the hang of it within a few weeks to a reasonable level of accuracy. **Again, *it is critical to note that "perfect" accuracy is not required for this metric to be useful!*** The Bodybuilding Template provides several weeks of practice at the beginning of each block to help develop a trainee's skills with estimating and applying RPE to their training, as it will become a critical tool as they become more advanced.

For these reasons, we argue that combining the quantitative (weight and repetitions) *and* qualitative (RPE) descriptors of performance are useful in assessing strength changes over time. We can use these descriptors to track an estimate of maximum strength over time known as the **Estimated 1-Repetition Maximum (E1RM)**. Estimated 1RMs represent a projection of the maximum weight you could lift for 1 repetition, based off of known values for load, repetitions completed, and RPE from a given set that you have actually performed.

Using the numbers from the previous example, the lifter who squatted 275 pounds for 5 repetitions at an RPE of 8 in their first week had an e1RM of approximately **340 lb**, but when they squatted 280 lb for 5 @ RPE 10 the following week, their e1RM was **325 lb**. Despite adding weight to the bar, our hypothetical lifter appears to be weaker (or at least *performing* worse) on week 2 in this scenario. As an aside, even if we didn't explicitly use RPE, the decrease in bar velocity is yet another indication that the trainee's strength is decreased during the second week session.

An exclusive focus on absolute load on the bar gives no indication that strength may be stagnating or regressing, and this information can be useful to guide programming adjustments over time. Suffice it to say, we think learning to use RPE is important and we'll use it to determine the weight on the bar used for each session. See the "Weight Selection" section for more information on this.

How-To Progress

In order to generate fitness adaptations such as strength, power, hypertrophy, and cardiorespiratory fitness, we need to provide both the appropriate stimulus or "stress" and recovery. We will provide an overview of the *Progressive Overload Principle* and how to do this in the context of The Bodybuilding Template.

In the context of physical training, the **stimulus** is generated by a workout or series of workouts, which subsequently produces *fatigue* and,

potentially, *fitness adaptations.* Enoka 2016

Fatigue is defined as a reduction in performance from a prior baseline and has two main sub-types, central and peripheral. Central fatigue occurs when the central nervous system's signal to a muscle is compromised, whereas peripheral fatigue is when the electric signal to the muscle is maintained, but the muscle cannot produce as much force as it normally would due to muscular damage, depletion of energy sources, or other factors.

Fitness adaptations are either a demonstrable improvement performance or potential for improvement performance, given that there are many factors contributing to absolute performance depending on the task. For example, improving an athlete's running economy and cardiorespiratory endurance improves their potential for running a set distance faster, but if it's really hot and humid out, their absolute performance may not actually improve.

In any case, the training program provides the stimulus that simultaneously drives fatigue, e.g. negative physiological and psychological effects, and fitness adaptations, e.g. positive physiological and psychological effects. When the positive elements outstrip the negatives, the fitness adaptations predominate. Conversely, when the negative elements outstrip the positives, fatigue predominates. The relationship between these negative and positive elements is driven by programming and recovery.

Specifically, greater training stimuli has the potential to drive greater fitness adaptations if, and only if, the individual can tolerate it. Conversely, reducing training stimuli has the potential to reduce fitness adaptations, unless the negative elements were previously outstripping the positives and subsequently, the drop in stimulus allows fitness adaptations to manifest in the short-term. This is typically called "peaking." With that in mind, let's look at how this applies to the Bodybuilding Template.

Progressive overload is the gradual increase of training stress placed upon the body during exercise training by modifying the following variables:

1) Increasing the intensity for a given movement or exercise .
2) Increasing the total training volume or increased number of repetitions at a given intensity.
3) Altering the speed or tempo of repetitions or exercise based on goals.
4) Reducing the rest periods for endurance-type improvements. Ratamess 2009.

With this in mind, the goal of progressive overload systematically increase the **training stimulus in order to produce fitness adaptations**. Humans readily adapt specifically to the demands placed upon them. These adaptations can be positive (e.g. improved strength) or negative (e.g. loss of aerobic capacity) depending on the stimulus applied. Training improves an individual's ability to tolerate training stimuli in multiple ways.

In strength training, we can manipulate the stimulus applied and fatigue generated through exercise selection, training volume (repetitions x sets), training intensity (loading), rest periods, and other factors. The goal is to apply the **correct type** and **correct amount** of stimulus to the individual in order to produce the desired fitness adaptation.

There is enormous variation between individuals in terms of their responsiveness and ability to adapt from a given stimulus, which depends on baseline fitness, previous training history, genetics, nutrition status, recovery resources, psychological and social factors, and many others Ahtiainen 2016.

For example, performing a new exercise produces more muscular damage the first time it is performed than at any point in the future - even if separated by weeks or months. This protective mechanism is known as the *Repeated Bout Effect* (RBE) and it also extends to similar movements Hyldahl 2017. In other words, a person who has done back squats before will incur less muscular damage when they do a front squat (compared to someone who has never squatted before), despite the front squat technically being "foreign" to them.

Adaptations to training volume and intensity also occur over time through both biological and psychological changes. A trainee becomes both **more resistant** to a training stimulus and **better at recovering** from training by becoming more well-trained Coffee 2006 Fell 2008. In short, a given workout is *less* of a stimulus to an advanced lifter who has done hundreds of similar workouts before.

Additionally, the more advanced lifter can recover faster from a given stimulus due to the previous adaptations they've already undergone. Therefore, in order to continue to produce adaptations over time, *more training stimulus* needs to be incrementally applied, though this does not need to be done linearly. Rather, it appears that trainees tend to see improvements in fitness adaptations from a given level of stimulus, and only

when the adaptations start to wane or regress does the stimulus need to be changed either in *magnitude* (or "dose") or *type*.

Let's look at how to do this using The Bodybuilding Template.

Resistance Training: We recommend progressing resistance training through increasing load and/or training volume (number of repetitions and sets) while holding the rest of the training variables fairly constant within each of the three discrete training phases, i.e. exercise selection, range of motion, RPE targets, and rest periods.

Practically speaking, this means planning to **add weight to the barbell each week** provided you're able to. For example, an individual performs the following on Day 1, Week 1 of The Bodybuilding Template:

- Exercise: Back Squat
- Working Set #1: 10 repetitions @ 175 pounds, rated at RPE 6
- Working Set #2: 10 repetitions @ 180 pounds, rated at RPE 7
- Working Set #3: 10 repetitions @ 185 pounds, rated at RPE 8

In this example, our lifter's estimated 1-Rep Max (e1RM) is 272 pounds. The following week, we'd like to increase the stimulus via increasing the load and volume per the prescribed repetitions and sets.

- Exercise: Back Squat
- Working Set #1: 10 repetitions @ 180 pounds, rated at RPE 6
- Working Set #2: 10 repetitions @ 185 pounds, rated at RPE 7
- Working Set #3: 10 repetitions @ 190 pounds, rated at RPE 8
- Working Set #4: 10 repetitions @ 190 pounds, rated at RPE 8

In this example, our lifter increased his e1RM to 279lbs under similar conditions, e.g. repetition scheme and RPE rating. He was also able to do more volume than the previous week by completing the 2nd set of 4 repetitions at RPE 8. Alternatively, the individual *could have* kept the weights the exact same and done the additional set of 4 repetitions, and that would have been acceptable in the short term. However, **the *expectation* is that, on average, an individual should be getting demonstrably stronger week-to-week** when following appropriate programming.

In other words, individuals who are actually getting stronger should be able to increase loads at regular time intervals, e.g. weekly or every other week,

without significantly increasing the RPE ratings, reducing reps, cutting the range of motion, or requiring dramatically extended rest periods. From this perspective, a load increase at the same RPE represents the *result* of adaptation having taken place, rather than an increase in load itself being the *driver* of adaptation.

With respect to how much weight to add per week, there isn't a one-size-fits-all answer, as individuals vary greatly in their response to a given training program. That said, **we recommend adding ~1-5% per week without overshooting the recommended RPE targets.** Of course, life happens, and you may not always be able to add the desired amount within the parameters of the program, and that's okay. The idea is to *assume you'll be adding weight until/unless proven otherwise, based on how you're actually performing during that training session.*

In summary, our default recommendation for progressing the resistance training elements of The Bodybuilding Template is to add weight to the selected exercises each week. When this is no longer possible for **two or more** exercises, we recommend moving on to the next phase of The Bodybuilding Template, or pursuing new programming entirely at the conclusion of template.

Accessory/Isolation Exercises: We recommend progressing these exercises in much the same way as other resistance training elements, e.g. increasing intensity and/or volume while maintaining the rest of the training variables.

Practically speaking, this means planning to **add weight or repetitions to the exercise each week, depending on the programming.**

Conditioning: We recommend progressing cardiorespiratory endurance training through increasing intensity while maintaining the rest of the training variables, i.e. modality selection, RPE, and duration of exercise.

Practically speaking, this means planning to **complete greater distances, use a heavier resistance, or burn more calories** in a given exercise duration without increasing the RPE of the exercise. For example, an individual performs the following during Week 1 of the Bodybuilding Template:

- Exercise: Air Bike for 25 minutes of "steady-state" cardio at RPE 6-7
    - Calories Burned on Week 1: 150 kCal*
    - Distance "Cycled" on Week 1: 2 miles*

(Note: *depending on the model of the air bike these calorie and distance numbers may be inaccurate. We're using them here for illustrative purposes only.)*

The following week, we'd like to increase the stimulus (commensurate with the new level of adaptation) via increasing the absolute intensity of the effort. Additionally, we'll also increase the duration by 5 minutes as we try to move our individual towards meeting the 2018 Physical Activity Guidelines for Americans (PAGA):

- Exercise: Air Bike for 30 minutes of "steady-state" cardio at RPE 6-7
    - Calories Burned on Week 1: 155 kCal in 25 min, 185 kCal in 30 minutes
    - Distance "Cycled" on Week 1: 2.7 miles in 30 minutes

Later in the Bodybuilding Template we include *High-Intensity Interval Training* (HIIT) to complement the lower intensity steady-state conditioning. Progression for this type of cardiorespiratory endurance training is similar, though there are generally more opportunities to increase resistance when compared to steady-state cardio.

For example, an individual might perform the following:

- Exercise: Rower - complete a 20 second sprint @ RPE 10 every 2 minutes for 12 minutes.
    - Calories Burned on Week 1: 120 kCal*
    - Distance "Rowed" on Week 1: 1000m total
    - Resistance: 6*

  *(*Depending on the model of the rower and the individual these calorie, distance, and resistance numbers may be way off. We're using them here for illustrative purposes only.)*

The following week, we'd like to apply a slightly larger stimulus (commensurate with the new level of adaptation) via increasing the absolute intensity of the effort. Additionally, we'll also increase the duration by 2 minutes for an additional interval as we try to move our individual towards meeting the 2018 Physical Activity Guidelines for Americans:

- Exercise: Rower- complete a 20 second sprint @ RPE 10 every 2 minutes for 14 minutes.
    - Calories Burned on Week 1: 154 kCal*
    - Distance "Rowed" on Week 1: 1190m total
    - Resistance: 6*

  [*Depending on the model of the rower and the individual these calorie, distance, and resistance numbers may be way off. We're using them here for illustrative purposes only. Additionally, adding resistance on rowers tends to be problematic because it can decrease stroke rate and rowing efficiency. We recommend trying to go a little further each interval week-

to-week. On the other hand, if one were performing prowler sprints or sled pulls, adding a bit of extra weight while traveling the same distance over the same time would represent progressive overload for that modality.]

In summary, our default recommendation for progressing the cardiorespiratory endurance elements of the Bodybuilding Template is to add *absolute intensity* (i.e., go a bit faster) to the selected exercises each week without exceeding the recommended RPE. When this is no longer possible, we recommend switching exercise modes.

What's Next?

After completing The Bodybuilding Template, the trainee is in a position to choose what they want to do next with their programming depending on their goals. One option is to run the template again, starting with the 1st block, and use different exercises selected from the drop-down menu. Alternatively, you could move to one of our strength-focused templates such as Strength I, Powerlifting or Strengthlifting II, Strength III, or the Olympic Weightlifting template.

If you're comfortable with what's been laid out so far, you are ready to get started training! The next section elaborates upon the details, theory, and evidence behind this template and approach to training – so feel free to read through it if you're interested. If you're just ready to get started, skip to the section titled "Completing Workouts".

General Physical Preparedness, or "GPP" Explained

GPP stands for general physical preparedness and includes anything that is useful for overall physical development, but is not specific to the task or sport. For example, conditioning work is relatively non-specific to powerlifting, however increasing a lifter's base of conditioning generally improves their ability to tolerate and recover from greater levels of training. In the Bodybuilding template, the GPP work is optional in the early phases of the program, and more strongly recommended in later phases of training.

For programmed GPP work, the aims are to improve conditioning, work capacity, and allow some programmed accessory work that is complementary to the intended goal(s) of the program, e.g. strength, hypertrophy, or specific conditioning. For most of the templates, the GPP is programmed week-by-week and can be viewed in two places:

1. Within the "Overview" tab, GPP recommendations are seen at the far right end of each week's programming.

2. Within each week's programming tabs, e.g. "Week 1, Week 2, etc.", the weekly GPP recommendations are seen at the bottom of the each week's programming under Day 3 or Day 4's programming.

We typically program in one to four different GPP elements:

1. **Conditioning**- HIIT or LISS "cardio"

2. **Trunk work**- Training designed to improve the strength and hypertrophy of the musculature of the trunk.

3. **Arm work**- Training designed to improve the strength and hypertrophy of the musculature of the arms.

For conditioning, we often use **both** high intensity intervals (HIIT) and low intensity steady state (LISS) work, as a bias towards development of one over the other tends to produce decreased performance overall. For example, using HIIT only in a lifter- with resistance training also being highly anaerobic- leaves the aerobic pathway relatively untrained.

Our conditioning programming include **both** a duration, e.g. how long to perform the conditioning, and an intensity, e.g. how hard the conditioning should be. For intensity, we use Rate of Perceived Exertion (RPE) to gauge effort as follows:

- RPE 6: More boring than difficult. Can carry on a conversation in full sentences.
- RPE 7: Easy effort. Can only talk in short sentences.
- RPE 8: Moderate effort, cannot speak comfortably.
- RPE 9: Hard effort. Near max effort.
- RPE 10: Maximal effort that is very difficult and not possible to sustain. All out sprint.

GPP can be performed on days where you don't have any scheduled lifting. Alternatively, it is perfectly fine to perform some or all of the GPP work after completing a lifting session. Use whatever works for your schedule.

For upper back work, we recommend that you select an exercise that uses a relatively large range of motion that can also be performed for many repetitions when loaded appropriately. Preferred exercises include things like chin-ups, pull-ups, one-arm rows, chest supported rows, barbell rows, lever rows, ring rows, inverted rows, lat-pulldowns, seated rows, etc.

The programming recommendations come in two different flavors:

1. **Time-priority -**These are often written as "**X**" minutes AMRAP (as many reps as possible), with the weekly frequency listed afterwards. For example, 7 minutes AMRAP of Upper Back Work 2x/wk means that the lifter should perform upper back work for a **total** of 7 minutes (use a timer) two times per week. We typically prefer sets to be in the 8-20 rep range and each set should be **submaximal**, i.e. RPE 7 to RPE 8, tops. Try to avoid going to failure. Additionally, we recommend trying to minimize rest between sets. It is totally okay for the repetitions per set to decrease throughout the prescribed time, e.g. 7 minutes in this example.

2. **Task-priority**- These are often written as "**X"** number of sets for "**Y"** number of reps @ _ RPE, followed by the weekly frequency. An example might look like, "Perform 2 sets of 12-20 reps @ RPE 8 2x/wk", which means do 2 sets of 12-20 repetitions of upper back work- each set being approximately RPE 8- twice per week. We recommend 2-3 minutes of rest in between sets.

   For trunk work, we recommend that you select an exercise that is predominantly isometric, e.g. requires the muscles to produce force, but not change length. Dynamic exercises that have both concentric and eccentric portions are okay as well, but we prefer isometric exercises as staples for "ab work", where applicable.

Preferred trunk exercises include things like planks, ab-wheel roll outs (from toes or knees), L-Sits, V-Sits, hollow rocks, tuck holds, strict toes to bar, hanging leg raises, back extensions, hip extensions, etc.

For arm work, we recommend that you select an exercise that uses a relatively large range of motion that can also be performed for many repetitions when loaded appropriately.

Preferred triceps exercises include things like triceps press downs, lying triceps extensions with E-Z curl bar, lying triceps extensions with dumbbells, standing overhead triceps extensions, JM press, French press, etc.

Preferred biceps exercises include things like dumbbells biceps curls, barbell biceps curls, preacher curls, hammer curls, etc.

The arm programming recommendations come in two different flavors:

1. **Time-priority -**These are often written as "**X**" minutes AMRAP (as many reps as possible), with the weekly frequency listed afterwards. For example, 7 minutes AMRAP of Arm Work 2x/wk means that the lifter should perform arm work for a **total** of 7 minutes (use a timer) two times per week. This means select **one biceps exercise** and **one triceps exercise** and perform them back-to-back, i.e. *superset* them. We typically prefer sets to be in the 8-20 rep range and each set should be **submaximal**, i.e. RPE 7 to RPE 8, tops. Try to avoid going to failure. Additionally, we recommend trying to minimize rest between sets. It is totally okay for the repetitions per set to decrease throughout the prescribed time, e.g. 7 minutes in this example.

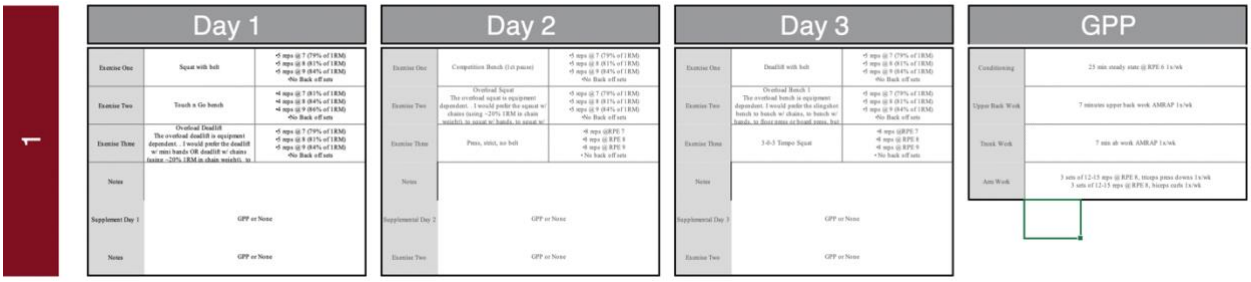
2. **Task-priority**- These are often written as "**X"** number of sets for "**Y"** number of reps @ _ RPE, followed by the weekly frequency. An example might look like, "Perform 2 sets of 12-20 reps @ RPE 8 2x/wk", which means do 2 sets of 12-20 repetitions of arm work- each set being approximately RPE 8- twice per week. We recommend 2-3 minutes of rest in between sets. Some templates will prescribe performing the biceps and triceps exercise back-to-back in a superset.

Again, the aims are to improve conditioning, work capacity, and allow some programmed accessory work that is complementary to the intended goal(s) of the program. We recommend not overthinking this aspect of the training and stick to the recommended GPP prescription.

Completing Workouts

So you're ready to go to the gym and start your workout. Here's how to set it up:

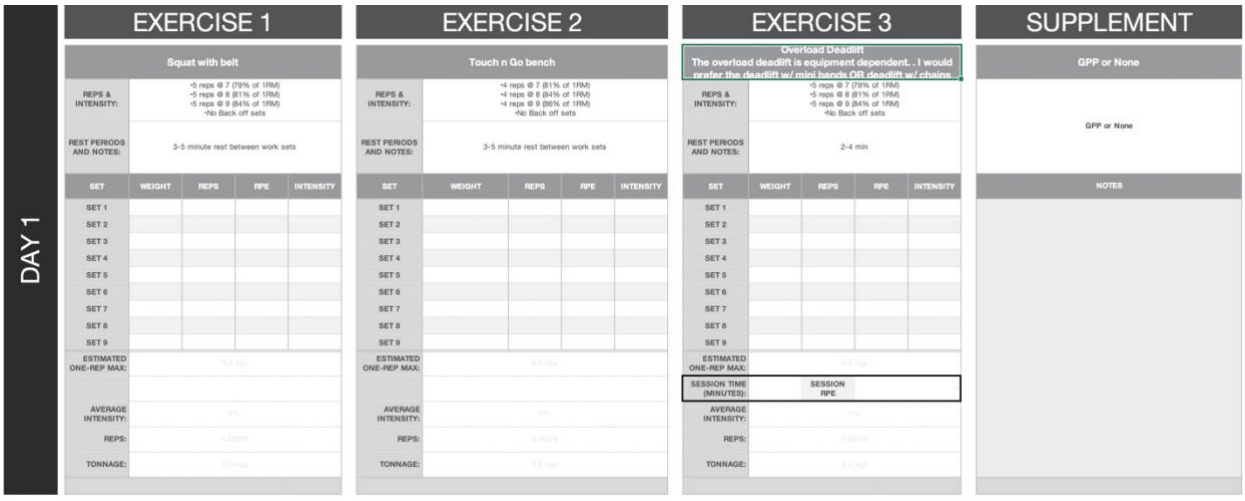
1) Click on the "Overview" tab and scroll up to the correct week. If you're doing your very first workout of the template, this will be Week 1, Day 1.



In this theoretical example (which may not match the specific template you are using), Week 1 Day 1 has the following programmed:

a. Squat w/ belt: 5 reps @ RPE 7, 5 reps @ RPE 8, 5 reps @ RPE 9.
b. Touch and Go Bench Press: 4 reps @ RPE 7, 4 reps @ RPE 8, 4 reps @ RPE 9.
c. Deadlift: 5 reps @ RPE 7, 5 reps @ RPE 8, 5 reps @ RPE 9.

If you prefer, you can click on the tab, "Week 1", and view the workout information in isolation.



Either way, now we know what exercises, rep schemes, and loading parameters we're supposed to perform on Day 1. From here, our options are to 1) go right to the gym and begin working up in weight, using RPE as our guide for loading, OR we can 2) use the calculator to help us select our **target** weights for each movement, THEN go to the gym and use RPE to guide loading around these "ballpark" target numbers.

Click on the "Calculator" tab and scroll up to the "Estimated One-Rep Max Calculator" and plug in your 1- Rep Max (1RM), if known. If you don't know your 1RM, you can use numbers like a 3, 5, or 10 Rep Max here. Alternatively, if you only know a *submaximal* effort, e.g. a set of 5 repetitions @ RPE 8, you can use that too!

If you don't know any of these numbers because you've never maxed out before or this is a new exercise, **have no fear**! See the "Weight Selection" section below for details on what to do instead (Figure 2)

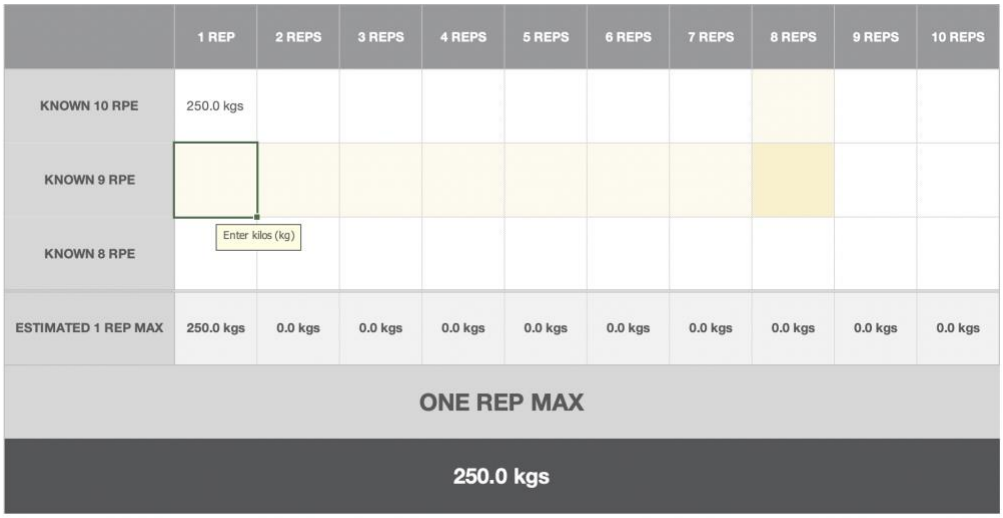


Figure 2: Weight Selection portion of the calculator tab. I used 250 kg for my 1RM here.

Scroll down to the "Estimated RPE Calculator" and you'll see all the rep ranges filled in for specific RPEs.

	1 REP	2 REPS	3 REPS	4 REPS	5 REPS	6 REPS	7 REPS	8 REPS	9 REPS	10 REPS
10 RPE	250.0 kgs	238.8 kgs	230.5 kgs	223.0 kgs	215.8 kgs	209.3 kgs	202.8 kgs	196.5 kgs	190.5 kgs	184.8 kgs
9.5 RPE	244.5 kgs	234.8 kgs	226.8 kgs	219.5 kgs	212.5 kgs	206.0 kgs	199.8 kgs	193.5 kgs	187.8 kgs	180.8 kgs
9.0 RPE	238.8 kgs	230.5 kgs	223.0 kgs	215.8 kgs	209.3 kgs	202.8 kgs	196.5 kgs	190.5 kgs	184.8 kgs	176.8 kgs
8.5 RPE	234.8 kgs	226.8 kgs	219.5 kgs	212.5 kgs	206.0 kgs	199.8 kgs	193.5 kgs	187.8 kgs	180.8 kgs	173.5 kgs
8.0 RPE	230.5 kgs	223.0 kgs	215.8 kgs	209.3 kgs	202.8 kgs	196.5 kgs	190.5 kgs	184.8 kgs	176.8 kgs	170.0 kgs
7.5 RPE	226.8 kgs	219.5 kgs	212.5 kgs	206.0 kgs	199.8 kgs	193.5 kgs	187.8 kgs	180.8 kgs	173.5 kgs	166.8 kgs
7.0 RPE	223.0 kgs	215.8 kgs	209.3 kgs	202.8 kgs	196.5 kgs	190.5 kgs	184.8 kgs	176.8 kgs	170.0 kgs	163.3 kgs
6.5 RPE	219.5 kgs	212.5 kgs	206.0 kgs	199.8 kgs	193.5 kgs	187.8 kgs	180.8 kgs	173.5 kgs	166.8 kgs	160.0 kgs

For the squat, we now have 195, 202.5, and 210kg as our *targets* for 5 reps @ RPE 7, 8, and 9, respectively.

Repeat the same process for the rest of the exercises for the day and then you're ready to train.

Time to head to the gym, get changed, and begin the warm up!

Warm-Up

The goal of a warm-up is to prepare you for the upcoming physical task and is comprised of both general and specific components.

A **general** warm-up is any activity that is different than what you will be doing for your workout. For example, doing 5 minutes of easy cardio prior to starting your squats is considered a general warm-up. At Barbell Medicine, we **do not recommend** any particular general warm-up as long as you are able to start the *specific* warm-up without any trouble. While it is fashionable to recommend things like foam rolling, stretching, and other modalities, the available scientific data suggests that these activities **do not** reduce risk of injury, pain, or improve performance in the workout. With that being said, if you feel that doing some light, general activity, e.g. riding an air-bike or using a rower for 5 minutes prior to a workout is beneficial to you, that is okay.

A **specific** warm-up involves activities that are *very similar* or *the same as* the planned training task and uses gradually increasing intensity. An example of a specific warm-up for training the squat would involve performing squats with the empty barbell and then progressively adding load towards your target weights.

Our recommended warm-up involves performing multiple sets of the specific exercise using the empty barbell until you feel prepared - mentally and physically - to start adding weight. If we go back to the scenario where we're trying to warm up to 195, 202.5, and 210 kg as our *tentative targets* for 5 reps @ RPE 7, 8, and 9, respectively, then our warm-ups might look like this:

- Squat 5 reps x 3-5 sets with the empty barbell
- Squat 5 reps x 1 set with 55kg
- Squat 5 reps x 1 set with 90kg
- Squat 5 reps x 1 set with 125kg
- Squat 5 reps x 1 set with 160kg

Now we're ready to hit our first targeted work set of 195kg. We'll also want to be closely monitoring the RPE to assess if our targets are actually in line with our performance potential on that particular day.

1. Squat 5 reps @ 195kg.
    a. **Rate RPE.** This set should feel like RPE 7, or that you have 3 repetitions "left in the tank" at the completion of the set.
    b. If this set feels significantly harder than RPE 7, e.g. RPE 8, then we'd recommend **a smaller-than-planned** jump for your next set- Maybe 197.5 instead of 202.5, for example.

c. If this set feels significantly easier than RPE 7, e.g. RPE 6, then we'd recommend **continuing the planned** jump to 202.5kg for the next set.

2. Squat 5 reps @ 202.5kg
    a. **Rate RPE.** This set should feel like RPE 8, or that you have 2 repetitions "left in the tank" at the completion of the set.
    b. If this set feels significantly harder than RPE 8, e.g. RPE 9, then we'd recommend **moving on** to either the prescribed back off sets **OR** the next exercise, depending on what is programmed. In this example, the lifter is supposed to work up to a set of 5 reps @ RPE 9 and there are no back off sets. In this scenario, we'd recommend moving on to the next exercise.
    c. Alternatively, if this set felt only a little harder than RPE 8, say RPE 8.5, then we'd recommend **a smaller-than-planned** jump for your next set- Maybe 205 instead of 210, for example.
    d. If this set feels significantly easier than RPE 8, e.g. RPE 6-7.5, then we'd recommend **a larger-than-planned** jump to 212.5kg for the next set instead of 210kg.
    e. For this example, let's assume that the set of 5 @ 202.5 felt like RPE 8.

3. Squat 5 reps @ 210kg.
    a. **Rate RPE.** This set should feel like RPE 9, or that you have 1 repetition "left in the tank" at the completion of the set.
    b. If this set feels significantly harder than RPE 9, e.g. RPE 10, then that represents an overshoot and we'd recommend **moving on** to either the prescribed back off sets **OR** the next exercise, depending on what is programmed. In this example, the lifter is supposed to work up to a set of 5 reps @ RPE 9 and there are no back off sets. **When back off sets are programmed and you overshot your top set**, you should calculate your back off sets off a lighter weight that would've (likely) approximated the target RPE.
    c. In this case, if a lifter squatted a set of 5 @ 210kg and it felt like RPE 10 (max effort), we'd estimate that their RPE 9 set should've been ~205kg. If back off sets had been programmed, then we'd calculate them from the lighter weight and **not the overshoot**.
    d. If this set feels significantly easier than RPE 9, e.g. RPE 7-8.5, then we'd recommend **a small increase** to obtain the proper RPE 9 weight, perhaps 212.5 or 215kg in this example.

The take-away here is that we should use the "target weights" as GUIDES for the day's work. It is important to avoid getting emotionally attached to calculated numbers; as we gather more and more feedback from each set, we can adjust in real time based on actual performance. While we would prefer that you hit each prescribed set as written, if you happen to overshoot and end up *skipping* a set (e.g. your planned RPE 8 feels like RPE 9) then we recommend moving on

with the rest of your workout and **NOT** going back to hit the missed set. Conversely, it is **OKAY** if you have to do an extra set or two in order to accurately hit the correct RPE.

Please see the section titled "Weight Selection" for a more in-depth discussion on RPE, intensity, and how to pick your target weights from week-to-week

Weight Selection

Intensity in the context of resistance training refers to the weight on the bar, as expressed by percent of 1 repetition maximum (1RM) or rate of perceived exertion (RPE). Using the correct intensity is very important to long term success on this or any other program, as it tends to determine the **type** of adaptations produced from the training. Let's use "strength" as an example to demonstrate this.

Strength is force production that is measured in a specific context. A 1-Rep Max (1RM) and a marathon are both demonstrations of force production in wildly different contexts. The 1RM squat requires a single, maximal force be produced by the working muscles over a specific range of motion, set of joint angles, muscle lengths, contraction types, and energy demands. Conversely, successful completion of a marathon requires repetitive, submaximal force production by the working muscles over specific ranges of motion, joint angles, muscle lengths, contraction types and energy demands. In short, there are different *types* of strength and the intensity used in training helps determine which one(s) you get.

One additional example for clarify purposes. Consider two identical twins, both previously untrained, who begin a 12-week resistance training program comprised of squats, presses, and deadlifts. Twin A does exclusively sets of 10 whereas Twin B does exclusively sets of 5, but both perform the same amount of total volume (reps x sets) each week.

Given that a set maximal set of 10 is approximately 70% of a lifter's 1RM and similarly, a maximal set of 5 is approximately 86%, who has a stronger squat at the end of 12-weeks?

It depends how you're "testing" their strength!

If we assessed strength using a 10RM measured before and after the 12-week training program, it is likely that Twin A- the twin doing exclusively sets of 10- will outperform Twin B- the twin who only did sets of 5. Conversely, if we assessed strength using a 5RM measured before and after the 12-week training program, twin B would likely have the upper hand. You see, strength is specific to how it is trained.

Now that we've established that intensity is important for determining the type of adaptations produced by an exercise program, let's talk about how we prescribe them. There are three main ways to do this:

Discrete Weights – Many programs rely on trainees starting at and/or adding pre-specified amounts of weight. An example would be to "Squat x 60kg (132lbs) x 6 reps x 3 sets" and "add 5lbs to previous workout's weight." While this method has the benefit of being concrete and simple, it also fails to take into consideration the day-to-day variance in human performance due to hundreds- if not thousands-of biological, psychological, and social factors.

Ideally, a workout provides the correct amount of stress to the individual in order to produce the desired fitness adaptation. From an intensity standpoint, if the workload is too high (too heavy) or too low (too light) to produce the correct amount (and type) of stress, then a trainee's results will likely be diminished, or the trainee may be exposed to unnecessary risk of injury. Relying solely on discrete loads increases this risk compared to having a more adaptable method of load selection that is based on real-time feedback from the trainee.

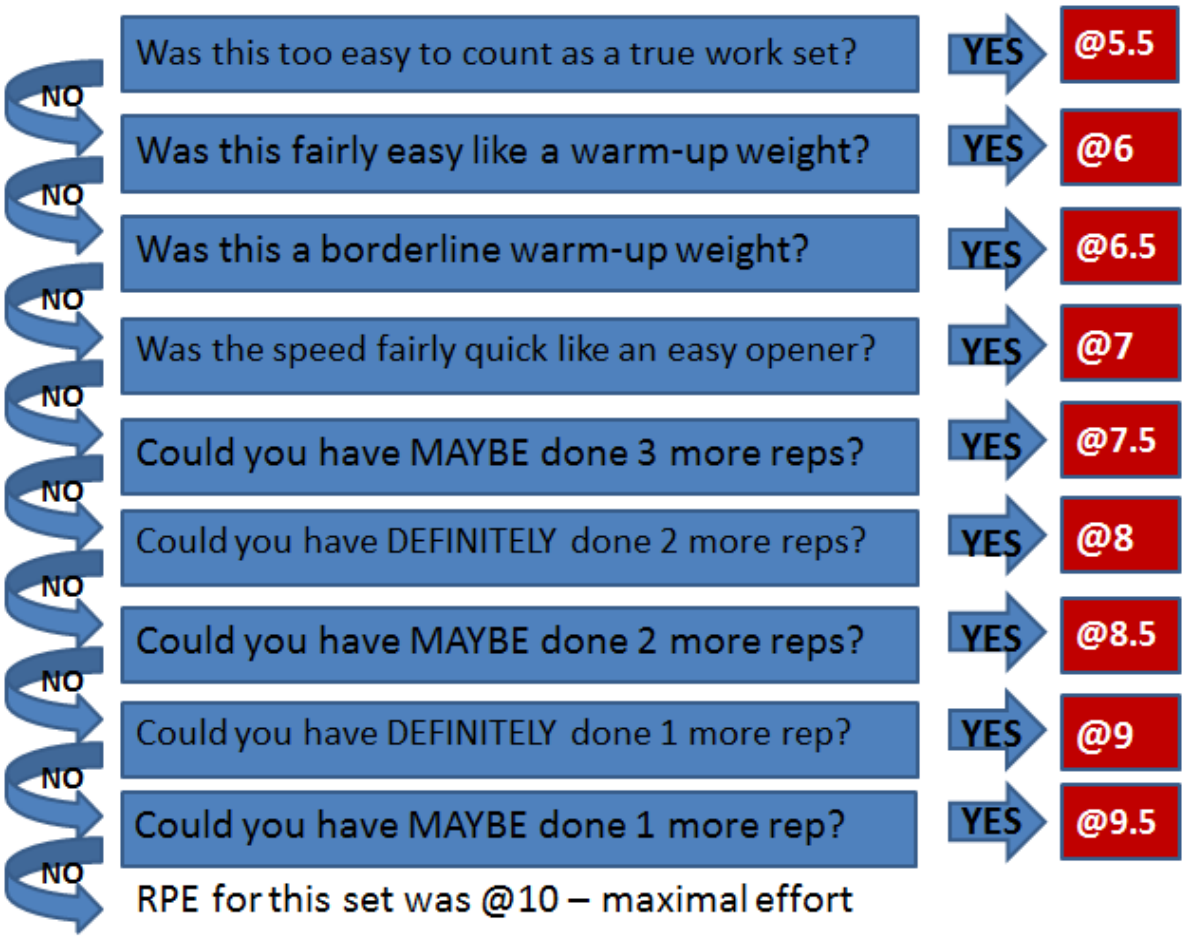
Percentages – Percentages are another common way to communicate intensity and they are typically based off a lifter's 1-Rep Max. Similar to relying only on discrete loads, using only percentages subjects the lifter to a number of potential problems. Firstly, if the lifter does not have a 1-Rep Maximum (or similar)- either for a particular exercise or at all- then percentages are a non-starter. Additionally, if a 1-Rep Max (or similar) is no longer current, i.e. it was performed a long time ago or the lifter is substantially weaker or stronger at the moment (read: day-to-day human performance variability), then the reliance on percentages increases the risk of using the wrong load compared to using a more adaptable method of load selection that is based on real-time feedback from the trainee.

RPE – Rate of Perceived Exertion is yet another way to prescribe intensity to a trainee. It is based on a 1-10 scale, with 1 being a very light effort and 10 being a maximal effort. Additionally, researchers have adapted another similar metric known as Reps in Reserve (RIR) to the RPE scale, which assigns "reps left in the tank" to each numerical value. For example, a set rated RPE 6 denotes that a lifter could do 4 more reps whereas a set rated at RPE 9 means a lifter could only perform 1 more rep. Thus, RPE is both qualitative (e.g. RPE 6 is *easier* than RPE 8) and quantitative, as shown in the previous example. RPE charts have also been made to assign approximate percentages to different rep and RPE values, which have been included in all of our templates. Seems like a pretty sweet deal, right? Yes, we agree!

It should be said however, that the biggest knock against RPE is that it is subjective. In other words, rating a set's RPE is influenced by how a lifter

feels and not necessarily what actually happened. That being said, we actually see this as a *benefit,* since it is arguably the only metric that can simultaneously capture the effects of all biological, psychological, and social influences on individual performance. Additionally, the current scientific evidence suggests that subjective ratings of fatigue (using RPE) correlate **much better** to injury risk and training outcomes compared to more "objective" metrics. Eckard 2018 Impellizzeri 2019 Saw 2016

With that in mind, we prefer to use Rate of Perceived Exertion (RPE) to communicate intensity to someone remotely. While it is subjective, there are objective components to it such as percentages (included when applicable), bar velocity, etc. The workouts rely heavily on the use of RPE to rate the effort level, especially during the last few warm up sets and unfamiliar exercises.



Rate of Perceived Exertion (RPE) Guide: Numbers on the right represent the RPE based on the response to the questions posed.

Where applicable, we provide both RPE and percentage recommendations to help you select the appropriate weight. That said, RPE ratings take precedence

over the prescribed percentages, as the percentage estimates may not generalize well across the population. In short, if an exercise calls for 5 repetitions at RPE 9 or 86%, but on that particular day, you rate 80% for 5 reps as RPE 9, you do not need to perform another heavier set. Rather, record the set and do the recommended back off sets where applicable.

Take the following as an example: We are supposed to squat 6 reps @ 6, 6 reps @ 7, 6 reps @ 8. So, you'll start your warm up like normal- starting at the empty bar and adding weight gradually- each set being down for whatever the rep prescription is for the day- in this example, it'd be 6 reps. When you get to the final warm ups, which have suggested loads for the main exercises, you should pay attention to your effort level. If your set of 6 reps @ RPE 7 feels harder than an RPE 7, you should temper the weight for the planned set of 6 reps @ RPE 8. If the warm up that was supposed to be "6 reps @ RPE 7" feels like RPE 8, then you do not need to do an additional set, but rather you've already found your RPE 8 set.

RPE ESTIMATE CALCULATOR	All Numbers are in Percentages of 1RM									
	1	2	3	4	5	6	7	8	9	10
10	100	96	92	89	86	84	81	79	76	74
9.5	98	94	91	88	85	82	80	77	75	72
9	96	92	89	86	84	81	79	76	74	71
8.5	94	91	88	85	82	80	77	75	72	69
8	92	89	86	84	81	79	76	74	71	68
7.5	91	88	85	82	80	77	75	72	69	67
7	89	86	84	81	79	76	74	71	68	65
6.5	88	85	82	80	77	75	72	69	67	64

RPE vs Percentage/Rep Scheme Guide: Repetitions are listed across the top (X axis) and RPE are listed down the left-hand-side (Y axis). Approximate percentage correlates are listed within the chart.

For the back-off sets, we have multiple prescriptions that are described as "load drops" or "repeats". If you work up to a top set of 3 repetitions and then take weight off the bar, this is a load drop. If, however, you work up to a set at RPE 7 or 8 and then do multiple sets at this weight, these are repeats.

Let's do another example: We have a supplemental squat of 2 count paused squats for 4 reps @ 7, 4 reps @ 8, 4 reps @ 9, followed by taking 5% off the bar for 2-3 sets until effort level is RPE 9 again. We do not provide percentages for this prescription because there is no reliable correlation between 2ct paused squat strength and squat with belt strength. Again, this is why RPE is very useful. So, we start at the empty bar and perform a set of 4. We add a little bit of weight to the bar and continue to perform 4 reps, repeating this pattern until we get to a set that feels like RPE 7. At this point, rest periods should be 4-5 minutes between sets. We should also then be taking 3-5% jumps in weight to perform our sets of 4 @ RPE 8 and then RPE 9. After performing the set of 4 reps at 9, take 5% off the bar, rest 4-5 minutes, and perform another set of 4 reps. Do this one or two additional times until the effort level approaches RPE 9 again. If this effort never

approaches RPE 9, the most likely explanation is that the top set of 4 @ RPE 9 was actually a little too light.

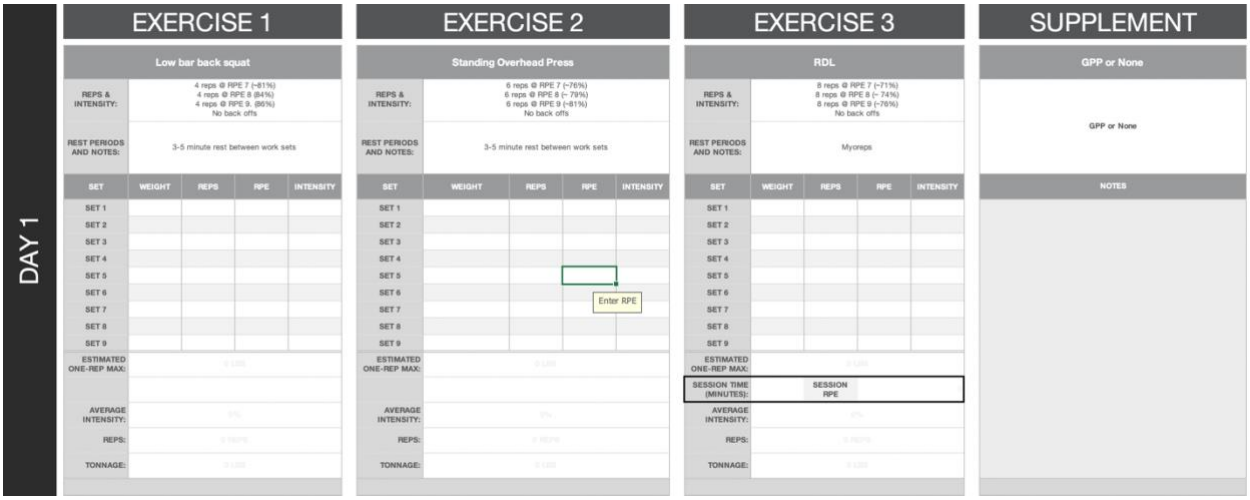
Yet another example, say my tested 1RM or predicted e1RM from previous training is 500 and I had the same prescription for sets and intensity as above. My planned 4 reps @ 7 would be 405lbs, then I'd rest 4-5 minutes before taking my planned 4 @ 8 of 419lbs. I do that and say "Yeah, that was about an RPE 8" and so I'm sticking to the plan for the day. Then I do my set of 4 reps @ 9, which is planned at 432lbs (based on the calculator). That feels a bit easier than a true 9- say an 8.5. So I have two options, I can rest 4-5 min and do my planned "back off sets" without modification (-5% in this example) at 415, OR I can make my attempted 4 @ 9 heavier, selecting 435 or 440lbs. I don't have a preference which one you choose if you need to modify on the fly, as I suspect the time you have to train will ultimately determine which method you choose.

Conversely, let's say that my planned 4 @ 9 at 405 felt more like RPE 10 than RPE 9. At this point, I may temper my planned fatigue sets and take 8 or 10% off the bar instead of the prescribed 5% so that I'm doing 405-410lbs for my back off sets because I think I just got feedback from that previous set of 4 about my performance for the day that indicates I need to go a little lighter.

As far as progression goes, the idea is to get our estimated 1RM to go up each week if possible. Even if it's by 1lb. So, I would suggest doing the first week based on your existing numbers. On week 2, plug in something that's about 1-5lbs heavier than your estimated 1RM for week 1 and plan to hit those. If, during your warm ups, it becomes obvious that it isn't going to happen, then temper the load appropriately and let RPE supersede our plans. **The goal is to maintain a favorable ratio between stimulus and fatigue**; in other words, to get high quality work done without overstressing you, the lifter.

Logging Training

All of our template come with built-in training logs in order to track your progress.

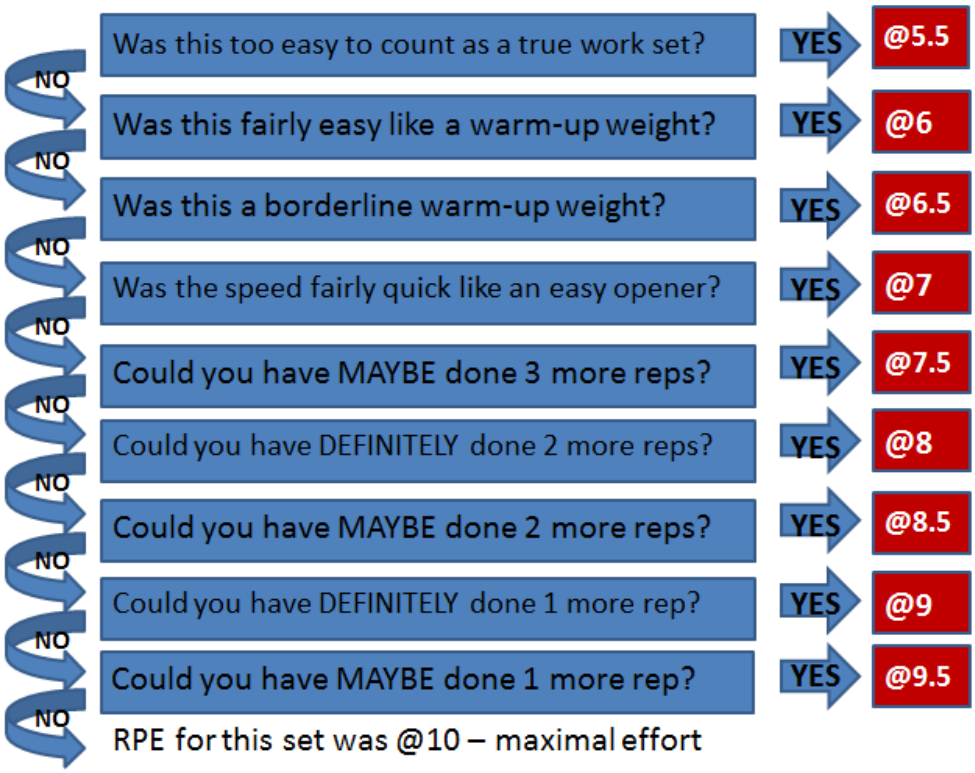


We recommend using them to track the following variables:

Weight used – Most of our templates come in both kilo and pound versions for you to log the weight used for each set. You can log your weight in half pound or kilo increments. For dumbbell exercises, we recommend recording the weight of 1 dumbbell, e.g. for a dumbbell press with 55-pound dumbbells, log the weight as 55 pounds. For exercises with bands, chains, etc., we recommend recording just the weight on the barbell.

Reps completed – Log the reps completed-per-set using whole numbers. For Myo-Reps, we recommend logging the activation set and back off sets in different rows rather than just reporting the total number of reps completed. This helps you plan the following week's workout.

Set Rate of Perceived Exertion (RPE) – Rate the RPE for each set during your workout and record the weight, reps completed, and RPE in your log for **all sets RPE 6 or greater.** You can record RPE in 0.5 increments. Use the following scale to help you rate the RPE for each set:



Additionally, you can use the prescribed percentages to help you select the appropriate weight using this chart:

RPE ESTIMATE CALCULATOR	All Numbers are in Percentages of 1RM									
	1	2	3	4	5	6	7	8	9	10
10	100	96	92	89	86	84	81	79	76	74
9.5	98	94	91	88	85	82	80	77	75	72
9	96	92	89	86	84	81	79	76	74	71
8.5	94	91	88	85	82	80	77	75	72	69
8	92	89	86	84	81	79	76	74	71	68
7.5	91	88	85	82	80	77	75	72	69	67
7	89	86	84	81	79	76	74	71	68	65
6.5	88	85	82	80	77	75	72	69	67	64

The intensity values, e.g. the percentages for each set and average intensity calculations, will auto-populate based upon the reps completed and RPE rating.

Session Duration – In the logging section for the 3rd exercise for each day you'll see an area to record the "Session Time." We recommend recording the total time spent training in minutes – including rest periods- in this space. This is one of the values used to determine AU (acute stress).

Session Rate of Perceived Exertion (RPE) - In the logging section for the 3rd exercise for each day you'll also see an area to record the "Session RPE." Please rate the session RPE on a scale from 1-10, with 1 being a very easy, minimally fatiguing session and 10 being an extremely hard, maximally fatiguing session.

We recommend assessing the session RPE by how fatigued you feel overall post workout:

sRPE 5 – Fairly easy workout. Minimal fatigue. Ready to train again.

sRPE 8 – Difficult, but manageable workout. Moderate levels of fatigue. No problems training the next day.

sRPE 10 – Extremely difficult workout. Maximal fatigue. Unlikely to be able to train again for a day or more.

This is the other value used to determine AU (acute stress).

The Analysis tab will auto-populate your weekly volume, average intensity, and estimated 1RM for a particular exercise based on data you enter into these weekly tabs.

Tabs Explained

Exercise Selection

See section on Exercise Selection.

Nutrition Log

The Nutrition Log tab allows you to track your daily and average body weights, macronutrient (e.g. protein, carbohydrates, and fat) intake, and daily and average calorie levels.

You can plug in your weight (in pounds) in the columns listed under the title Weight. It will automatically convert your weight to kilograms. Additionally, your average weekly weights will be calculated automatically after plugging in a series of weights.

You can also log the fat, carbohydrate, and protein in grams you consume per day under their respective titles. Your total daily calorie intake will be calculated automatically.

Calculator

The calculator tab is used to predict what weight at what RPE and rep number you need to hit in order to beat your previous estimated one-rep max from the previous week (or best). The idea is to have your estimated 1RM go up each week, or as often as possible. Using this calculator can be super useful especially when the rep ranges change from week to week.

Click on the "Calculator" tab and scroll up to the Estimated One-Rep Max Calculator and plug in a 1- Rep Max (1RM), if known. If you don't know your 1RM, you can use numbers like a 3, 5, or 10 Rep Max here. Alternatively, if you only know a *submaximal* effort, e.g. a set of 5 repetitions @ RPE 8, you can use that too!

After plugging in your known weight, you can see the predicted weights for each rep and RPE value in the Estimated RPE Calculator.

Analysis

The analysis tab will auto-populate your weekly volume, average intensity, and estimated 1RM for a particular exercise based on data you enter into the weekly tabs.

Each exercise has a graph that visually shows the e1RM trend over time, which again will auto-populate based on data entered into the weekly tabs.

Lastly, in the top right corner there is an "AU/CU" ratio log. AU stands for "acute arbitrary units" and CU stands for "chronic arbitrary units." A workout's AU is the product of the total time spent training (in minutes) and the session RPE (sRPE). Weekly AU is calculated from the sum of each workout's AU. Finally, the AU/CU ratio compares a single week's AU to the preceding four weeks' AU average.

We recommend logging your training, including reps, sets, RPE, and AU in the weekly training tabs.

Overview

The overview tab allows the template user to view the entire training program week-by-week. The weeks are labeled 1-16 on the left-hand side of the sheet and the training days are labeled 1-5 across the top of the sheet.

Each exercise and its specific programming is included in the overview sheet. Additionally, each week's GPP programming is listed on the right side of each week under the GPP heading.

Weekly Tabs

The weekly tabs contain each week's programming and training logs.

The days, e.g. Day 1 through Day 4, are listed on the left-hand side and the daily exercises are listed to the left in the appropriate order, e.g. Exercise 1, Exercise 2, Exercise 3, and Supplemental Exercises.

GPP work is listed at the bottom of each weekly tab.

To log your training, plug in the weight, reps, and RPE of each set. We recommend logging every set RPE 6 or greater. The intensity, e1RM, average intensity, total reps, and tonnage will all auto-populate.

In Exercise 3's logging area, you'll see a cell labeled "Session Time (minutes)" where you should log how the total time you spent training including rest periods, warm-ups, etc. Additionally, you'll see a cell labeled "Session RPE" where you should rate the difficulty of the entire session on a 1-10 scale, with 1 being a very easy session and you're ready to train again right now and 10 being a very hard, maximal effort session and you are exhausted. Most sessions should fall in the 6-8 range. If you find yourself consistently higher or lower than that, we'd recommend taking special care to hit the prescribed loads (RPEs) correctly and sticking to the recommended rest periods.

In the top left corner of each weekly tab you'll see a chart labeled "Weekly Totals." All of these values will auto-populate, which gives you a quick overview of the training week's pertinent variables at a glance.

Frequently Asked Questions

1. **Who do I contact about technical problems?**

   Send an email to support@barbellmedicine.com

2. **When should I use a belt?**

   We recommend using a belt on all exercises labeled as "with belt" or "competition." Alternatively, you are free to use a belt any exercise variation you want to. However, our stock recommendation is to go beltless on all other variations if possible.

3. **I have an injury, what do?**

   Start here:

   You may also post a question on our Facebook group or Pain/Injury forum to get specific recommendations to any injury-related problem you may have.

   Facebook Group:
   https://www.facebook.com/groups/BarbellMedicineGroup/

   Forum: https://forum.barbellmedicine.com/forums/pain-and-rehab-q-a-with-dr-derek-miles-and-dr-michael-ray

   That being said, **don't panic.** Remain calm. Us the above resources and your doctor, if needed, to determine the correct course of action.

4. **What should I do when I don't know my max for a particular exercise?**

   We recommend using RPEs to arrive at the correct workload for the day. After using RPE for the initial exposure to the exercise, you will have an estimated 1RM to work from.

5. **What should I do if I don't want to use RPE?**

   We include percentages where we can, but we feel that using some intrinsic metric of difficulty is very important and we encourage you to give RPE a little time before writing it off.

   If you absolutely will not use it, you can run the templates based solely on the percentages correlated with the specific Rep and RPE prescriptions.

Head over to the calculator tab and plug in 100 for your 1RM. Then you will see all the percentages associated for each RPE and rep prescription.

6. **Can I substitute ____ for ____?**

Unfortunately, it is not possible to provide substitutions for all exercises. However, if you have an injury or equipment issue, substitute the exercise programmed for a different exercise within the same "class." In other words, if it's a squat type of movement, replace the programmed exercise with another kind of squat or if it's a bench or press, replace with another type of pressing exercise.

For equipment limitations, please replace whatever you don't have or cannot do (due to prior injury or other limitations) with something similar, e.g. for leg press/belt squat/front squat- you could theoretically do a regular back squat or lunges. Please don't buy another gym membership because of me!

7. **What supplements do you recommend?**

See here: https://forum.barbellmedicine.com/forums/nutrition-q-a-with-dr-jordan-feigenbaum/15180-supplement-what-when-why-and-how

8. **What are AMRAP?**

AMRAP means "as many reps as possible" and you'll see it programmed in various contexts throughout many of our templates. The idea is to perform the prescribed exercise for as many reps as you can **without failing a repetition**. In other words, stop just before failure. We repeat, stop just before failure.

For GPP work like upper back, trunk, and arm work, this means SUBMAXIMAL SETS, e.g. try and leave at least 1 rep in the tank.

If you cannot do unassisted chin ups or pull ups, use a band or assisted pull up machine (Gravitron). Alternatively, you can do lat-pull downs and I'd argue that if you're good at chins/pull ups already- you might take a ""chin holiday"" for a few weeks here and work on the lat-pull down or a row variation.

9. **What are Myo-Reps?**

Myo-Reps are a type of rest-pause training where we obtain near maximal volitional motor unit recruitment via the activation set (the first

set) and capitalize on that by performing multiple back off sets on short rest thereafter.

Myo-Reps are typically written as "12-15 @ RPE 8, 3-5."12-15 denotes the rep range of the activation set. Select a weight that you predict you can do for 12-15 reps at approximately RPE 8. This is ~58-65% of a 1RM, when known.

The 3-5 denotes the rep range for the back-off sets, which are performed after the activation set. The larger number, 5 in this case, represents the cap for reps performed per back-off set. In other words, only perform 5 reps per back-off set. The smaller number, 3 in this case, represents the cut-off for completing the Myo-Rep. Once any set is performed for 3 repetitions or less, you're done with the Myo-Rep. Move on.

Here's a brief explanation on Myo-Reps:

The activation set works you up to the prescribed rep range @ RPE 8. The idea is that this set should be taken to near failure. So, if you are completely guessing on the weight and happen to get to 12 or 15 reps and are not near failure (RPE 8) then you should continue the set until reaching that point. In other words, it is okay to do 20, 25, or even 30+ reps for your activation set. The idea is that the intraset fatigue builds up and causes maximal motor unit recruitment, which is then leveraged to produce hypertrophy on the subsequent back off sets that are performed on short rest. The motor unit recruitment is only maximized when using the lighter load in a Myo-Rep if the activation set is taken to near failure.

After your activation set, rack the bar and take 5 deep breaths. Then do 3-5 reps, aiming for 5 reps. Re-rack the weight and take another 5 breaths, repeat.

The first time you hit 2 reps less than the first set of 3-5, e.g. you hit 5 reps the first set and you hit 3 on the 2nd set, you're done. If you hit 4-4-3, you're done after the set of 3. If you hit 3-3-3-2, you're done after the double.

Exercise Demos

Press Exercises

- Press: https://www.youtube.com/watch?v=isAJB6MKUg0&feature=youtu.be
- Classic Press: https://www.youtube.com/watch?v=pimRRnQanjY&feature=youtu.be
- Push Press: https://www.youtube.com/watch?v=ZyJSt05zXOs&feature=youtu.be
- 2 Count Paused Bench: https://www.youtube.com/watch?v=N4Zy9X4l09M&feature=youtu.be
- Touch and Go Bench: https://www.youtube.com/watch?v=S4NlX83DqVE&feature=youtu.be
- Close Grip Bench: https://www.youtube.com/watch?v=zPwoGanhQ28&feature=youtu.be
- Floor Press: https://www.youtube.com/watch?v=cA14CAjilyc&feature=youtu.be
- Close Grip Floor Press: https://www.youtube.com/watch?v=0fbeVIlC7SU&feature=youtu.be
- Pin Bench: https://www.youtube.com/watch?v=RLfnie5wMyA&feature=youtu.be
- How to Bench: https://www.youtube.com/watch?v=1FWDde2lEPg

Deadlift Exercises

- How to Deadlift:
- https://www.youtube.com/watch?v=wYREQkVtvEc
- Common Deadlift Errors: https://www.youtube.com/watch?v=NYN3UGCYisk

- Barbell Row: https://www.youtube.com/watch?v=_hDxEomiZHw&feature=youtu.be
- Rack Pull, Mid Shin: https://www.youtube.com/watch?v=KkS18KNJCkY&feature=youtu.be
- Romanian Deadlift: https://www.youtube.com/watch?v=m6HXwAN-gdw&feature=youtu.be
- Stiff Legged Deadlift: https://www.youtube.com/watch?v=lsAFY5Dv7E8&feature=youtu.be
- 2" Deficit Deadlift: https://www.youtube.com/watch?v=FeZrlhmvoJI&feature=youtu.be
- 2 Count Paused Deadlift: https://www.youtube.com/watch?v=njujfUjkz0k&feature=youtu.be
- Lever Row: https://www.youtube.com/watch?v=gx1Ex38j3Ec&feature=youtu.be

Squat Exercises

- How to Squat: https://www.youtube.com/watch?v=vmNPOjaGrVE&t=5s
- Common Squat Errors: https://www.youtube.com/watch?v=NtX8GGbDCuc
- 2 Count Paused Squat: https://www.youtube.com/watch?v=ODft8vnXhlE&feature=youtu.be
- 3-0-3 Tempo Squat: https://www.youtube.com/watch?v=fKELjulrULA&feature=youtu.be
- 5-3-0 Tempo Squat: https://www.youtube.com/watch?v=vre8HM0vcXE&feature=youtu.be
- Pin Squat: https://www.youtube.com/watch?v=B13-AZVWchA&feature=youtu.be
- Front Squat: https://www.youtube.com/watch?v=WkWzoiKQE2I&feature=youtu.be

Resources and Contact

Technical

For all technical issues, please send us an email to support@barbellmedicine.com

Website

Find all of our articles, videos, and more at www.barbellmedicine.com

Forum: www.forum.barbellmedicine.com/

Social Media

Find us on social media:
YouTube: http://www.youtube.com/c/BarbellMedicine
Instagram:
@austin_barbellmedicine
@jordan_barbellmedicine
@leah_barbellmedicine
@vanessa_barbellmedicine
@untamedstrength
@michael_barbellmedicine
@derek_barbellmedicine
@hass_barbellmedicine
@charlie_barbellmedicine
@alex_barbellmedicine
@tomcampitelli
@barbellmedicine

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