Barbell Medicine Low Back Pain Rehab Template

BARBELL MEDICINE
WITH YOU FROM BENCH TO BEDSIDE

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Low Back Pain Rehab Template

Welcome to the Barbell Medicine Low Back Pain Rehab Template. 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!

Background

Watch this video

The world prevalence rate of back pain is 9.4%, meaning that if you are experiencing low back pain, you aren't alone.

90% of those experiencing low back pain have non-specific low back pain, which means that there is no diagnosable underlying pathology to attempt correlation to pain. This is a good thing and highly likely no need to worry or be anxious about the situation.

The prognosis, the clinical course or outcome, is great with marked reductions in pain and disability occurring within the first 6 weeks for most patients.

This template is based around education and encouragement of the user. We want to education folks and provide reassurance, as it is highly likely the person does NOT have a serious disease warranting further investigation (like imaging), and symptoms will improve over time.

We also want to encourage the individuals to avoid bed rest and stay active

Expectations

The entire template should take 9-12 weeks depending on the length of PHASE 1.

This process may increase symptoms.

Two Rules:

1) Symptoms shouldn't increase to the point the athlete loses function (debilitated).

2) If symptoms increase, they shouldn't last for 24 hours.

If either A and/or B occur, then it is likely the athlete is not tolerating loading of the area and modifications should be made.

NOTE: If progressive neurological symptoms occur (loss of sensation, loss of movement in extremities, loss of control over bowel or bladder movements, and/or groin numbness - please seek medical consultation immediately.

You may find participation on our Pain and Rehab forum useful for any additional questions or just sharing with others in the community. Click here or just head over to our website.

Phases

Phase 1 (Week 1*)

Goal- Decrease pain and improve active range of motion using isometrics and isoinertial loading.

*Week 1 may be repeated for up to 2 additional weeks, e.g. Weeks 1-3 when necessary based on symptoms and improvement. Subsequently, phases 2 and 3 are labeled as if the lifter required 3 weeks in Phase 1, which may not be necessary.

Phase 2 (Weeks 2-5)

Goal- Increase loading capacity with increasing volume and lower external intensity.

Phase 3 (Weeks 5-9)

Goal- Return to normal programming by increasing intensity and movement specificity, e.g. more absolute load. This is where adding this qualitative metric can help us differentiate these situations for a more accurate view of training progress.

Back Pain Resources

STaRT back screening tool

Owestry Lumbar Questionnaire

Tampa Scale of Kinesophobia

For optimal use, complete one of these assessments prior to starting the template, at week 5, and at completion of template.

Research Papers

Hoy D, March L, Brooks P, et al. The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. Annals of the rheumatic diseases. 2014; 73(6):968-74.

Koes BW, van Tulder MW, Thomas S. Diagnosis and treatment of low back pain BMJ. 2006; 332(7555):1430-1434.

Menezes Costa LdC, Maher CG, Hancock MJ, McAuley JH, Herbert RD, Costa LOP. The prognosis of acute and persistent low-back pain: a meta-analysis Canadian Medical Association Journal. 2012; 184(11):E613-E624.

Foster NE, Anema JR, Cherkin D, et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. Lancet (London, England). 2018; 391(10137):2368-2383.

For information on consults please visit our website.

For any issues or other questions email us at
support@barbellmedicine.com

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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).

Exercise Selection

For each of the phases (more detail on them below) there are tabs labeled "exercise selection" where we advise the lifter to choose their preferred lift variation from the drop down menu. The pre-filled exercises are one example of a potential progression through the rehab template.

The lift variations are listed from least to greatest with respect to the "likely perceived threat" in the context of a typical powerlifter. For example, in phase 1 the bodyweight squat has the lowest perceived threat of back pain during the movement compared to the low bar back squat. We'd advise that the user of this template uses the exercise with the greatest perceived threat that does not increase pain symptoms in order to get the most desensitization.

Rate of Perceived Exertion

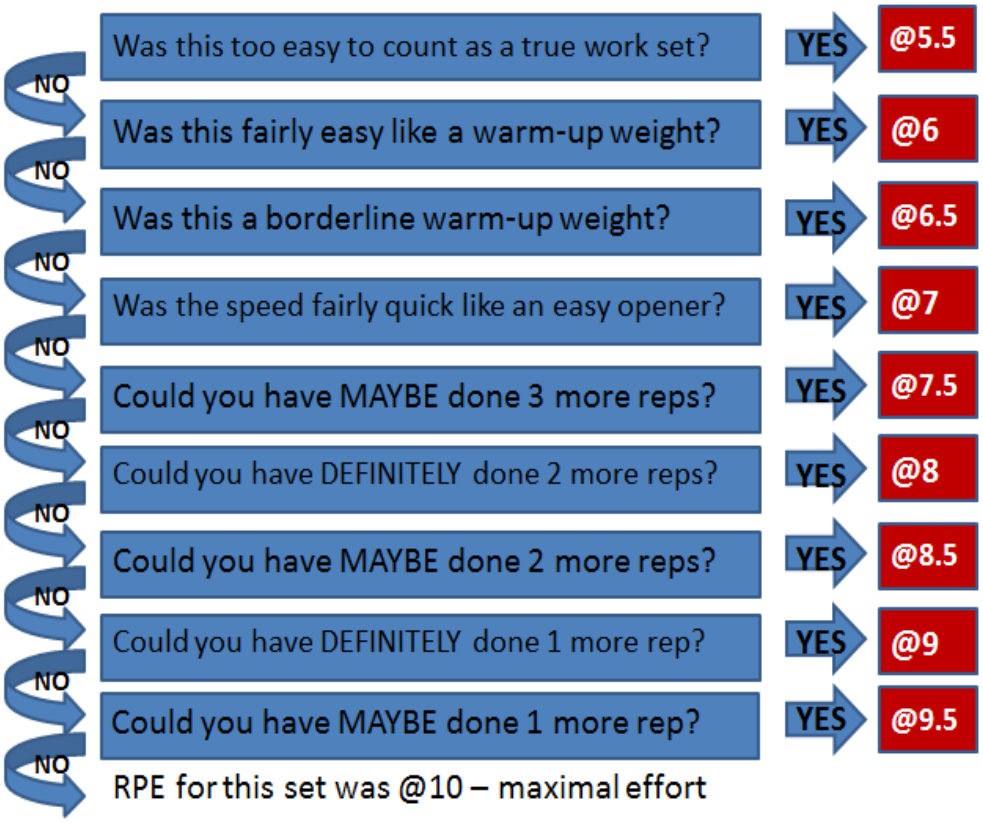


Fig. 1- RPE Chart. The red boxes on the right side of the image represent the RPE rating.

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 an individual was. For example, after completing the squat set of 275 lbs 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 obsessing over "perfect" accuracy. However, It is much more important to use it *consistently* than it is to have perfect accuracy.

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 Beginner Template provides 3 weeks of practice time 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 descriptors of performance are useful in assessing strength changes over time. We can use these descriptors to track **the Estimated 1-repetition maximum (E1RM)** as our primary metric over time. Estimated 1RMs represent an approximate projection of the maximum weight you could lift for 1 repetition. It is calculated using *known* values for load, repetitions completed, and the RPE of a given set that you have actually performed.

Using the numbers from the previous example, the lifter who squatted 275 lbs for 5 reps at an RPE of 8 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 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.)

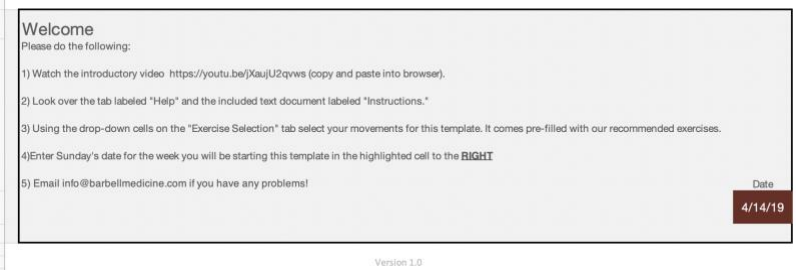
An exclusive focus on absolute load on the bar gives no indication that strength may be decreasing, and this information can be useful to guide programming adjustments over time. Suffice it to say, we think learning to use RPE is important and we'll use it to determine the weight on the bar used for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

Template Instructions

How To Get Started

Use the following instructions to open and save your template.

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 template, 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.
4. 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.
5. 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: https://chrome.google.com/webstore/detail/excel-online/iljnkagajgfdmfnnidjijobijlfjfgnb?hl=en-US
    b. Desktop version of Microsoft Excel: https://products.office.com/en-us/excel
    c. Google Sheets: https://www.google.com/sheets/about/
6. 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.



Picking Exercises

Many of our templates now allow users to pick their own exercises. If this is the case you'll see a tab at the bottom of the screen titled "Exercise Selection." By selecting that tab you'll be brought to a series of drop-down menus that will allow you to select your preferred exercise variations. 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. Additionally, templates that do allow a user to select their own variations come "pre-programmed" with our default recommended programming.

1. Selecting the exercises
    - Hover your mouse over the cell you'd like to select an exercise for. You'll see a small gray arrow in a box pointing downwards that when selected, will show you the options you can choose for that particular exercise slot.
    - Click on the variation you'd like to select and that will place the exercise variation in the appropriate place for the given program.
    - Please select variations for all the available cells.

2. The templates that have user-selected variations come 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.

Please refer to the "Overview" section of this document for a further discussion of exercise variation selection where applicable.

GPP

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.

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. **Upper back work**- Training designed to improve the strength and hypertrophy of the musculature of the upper back.
3. **Trunk work**- Training designed to improve the strength and hypertrophy of the musculature of the trunk.
4. **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, Pendlay rows, lever rows, ring rows, inverted rows, lat pull-downs, 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

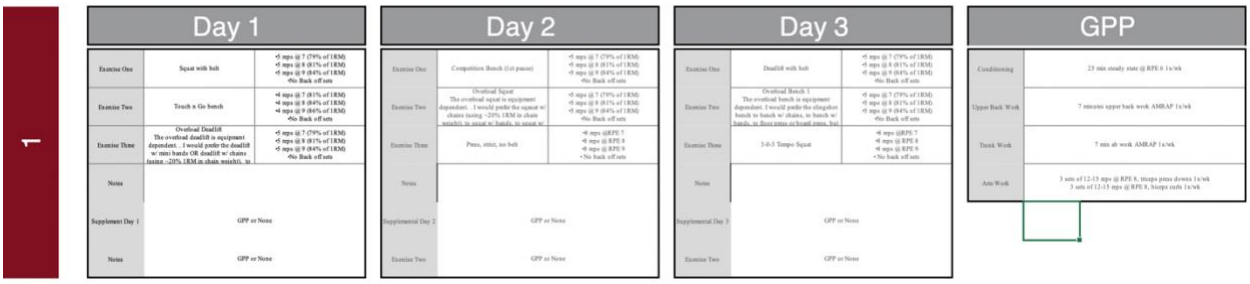
rest in between sets. Some templates will prescribe performing the biceps and triceps exercise back-to-back in a superset.

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.

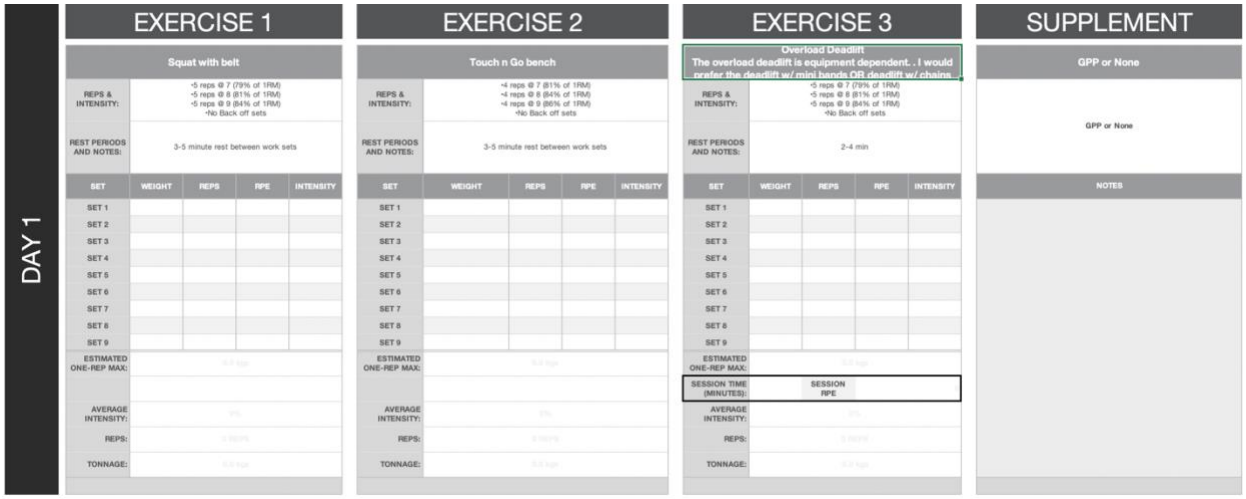
Completing Workouts

So you're ready to go to the gym and start your workout. Here's how to get all set 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.



   a. In this example, Week 1 Day 1 has the following programmed:
      i. Squat w/ belt: 5 reps @ RPE 7, 5 reps @ RPE 8, 5 reps @ RPE 9. No back off sets.
      ii. Touch and Go Bench Press: 4 reps @ RPE 7, 4 reps @ RPE 8, 4 reps @ RPE 9. No back off sets.
      iii. Overload Deadlift (can vary based on equipment options): 5 reps @ RPE 7, 5 reps @ RPE 8, 5 reps @ RPE 9. No back off sets.
   b. **If you prefer**, you can click on the tab, "Week 1", and view the workout information in isolation.



   c. **Either way,** now we know what exercises, rep schemes, and loading parameters we're supposed to perform on Day 1. From here, we can use the calculator to help us select our **target** weights for each movement.

2. 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!
    a. 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.
3. In this example, I plugged in 250kgs for my 1RM.

	1 REP	2 REPS	3 REPS	4 REPS	5 REPS	6 REPS	7 REPS	8 REPS	9 REPS	10 REPS
KNOWN 10 RPE	250.0 kgs									
KNOWN 9 RPE										
KNOWN 8 RPE	Enter kilos (kg)									
ESTIMATED 1 REP MAX	250.0 kgs	0.0 kgs	0.0 kgs	0.0 kgs	0.0 kgs	0.0 kgs	0.0 kgs	0.0 kgs	0.0 kgs	0.0 kgs

ONE REP MAX

250.0 kgs

4. 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

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

6. Repeat the same process for the rest of the exercises for the day and then you're ready to train.
7. 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 provided 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 then go ahead and do that.

A **specific** warm-up is either very similar or the same as the upcoming activity and uses gradually increasing intensity. For example, performing squats first with the empty barbell and then progressively adding load towards your target weights.

Our recommended warm-up is to perform multiple sets of the specific exercise with 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 210kg as our *targets* for 5 reps @ RPE 7, 8, and 9, respectively, then our warm-ups would like this:

1. Squat 5 reps x 3-5 sets with the empty barbell
2. Squat 5 reps x 1 set with 55kg
3. Squat 5 reps x 1 set with 90kg
4. Squat 5 reps x 1 set with 125kg
5. 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 in line with our performance potential on that particular day.

1. Squat 5 reps x 1 set @ 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 x 1 set @ 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 x 1 set @ 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. As we gather more and more feedback from each set, we can adjust on the fly as needed. While we would prefer that you hit each prescribed set as written, if you happen to overshoot and *skip* 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 highly 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:

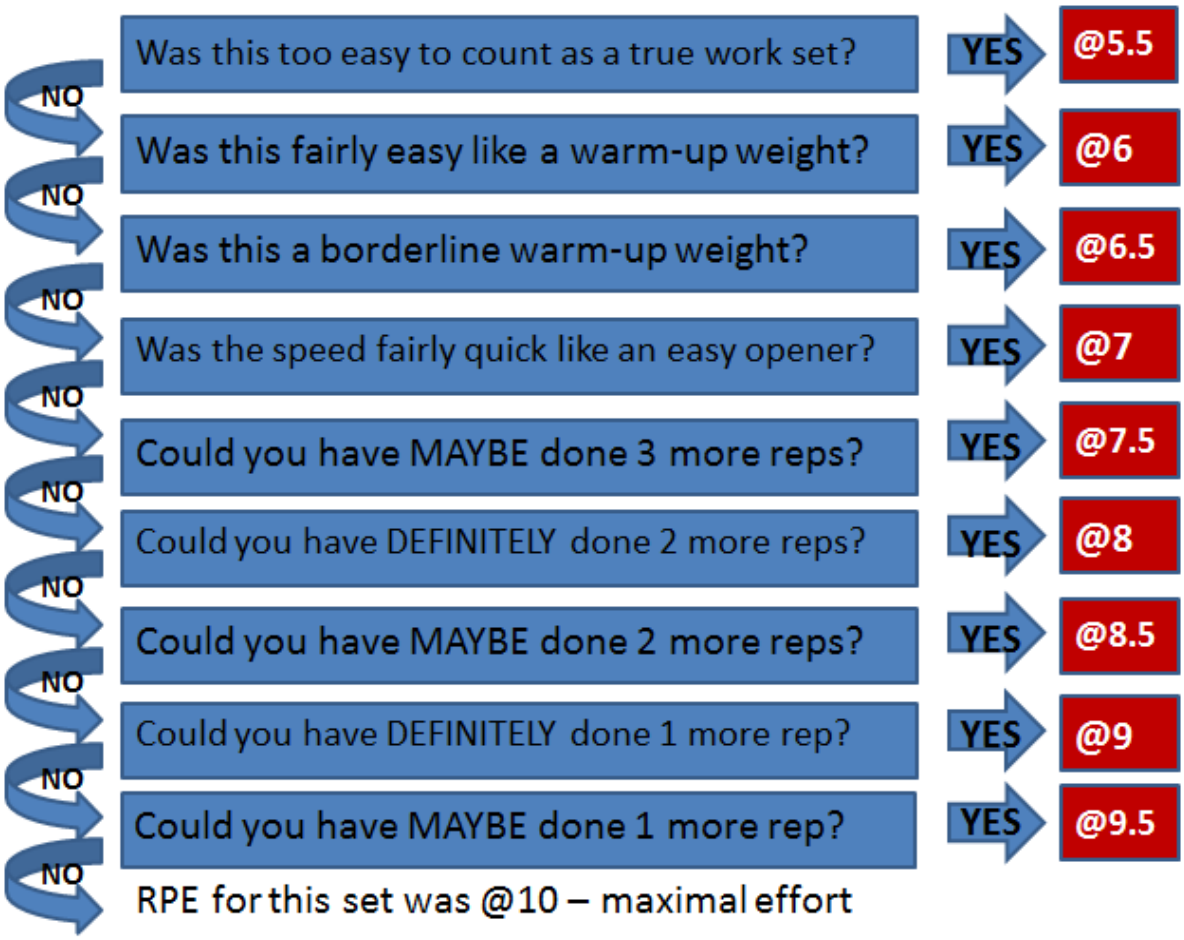
1. **Discrete Weights** – Many programs rely on trainees starting at and/or adding pre-specified amounts of weight. An example would be to "Squat x 60kg (132lbs) x 6 reps x 3 sets" and "add 5lbs to previous workout's weight." While this method has the benefit of being concrete and simple, it also fails 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. 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.

2. **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.

3. **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 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 see this as a benefit and the current scientific literature agrees! It appears that subjective ratings of fatigue (using RPE) correlate **much better** to injury than objective metrics like loading, volume, etc.

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. 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). Percentage correlates are listed within the chart.

For the fatigue sets or 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.

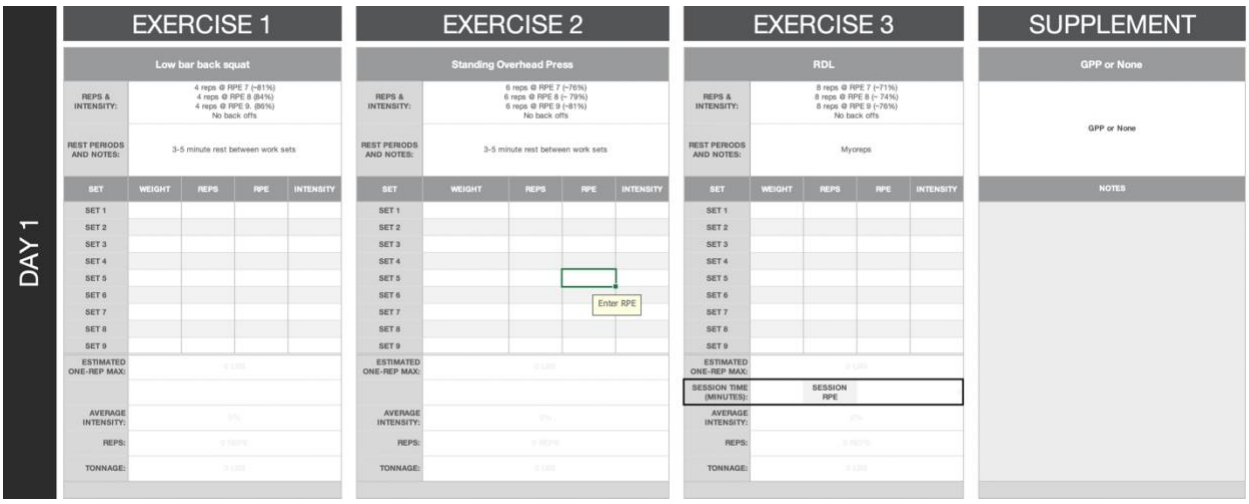
Yet another example, say my tested 1RM or predicted e1RM from previous training is 500 and I had the same prescription for sets and intensity as above. My planned 4 reps @ 7 would be 405lbs, then I'd rest 4-5 minutes before taking my planned 4 @ 8 of 419lbs. I do that and say "Yeah, that was about an 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 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.

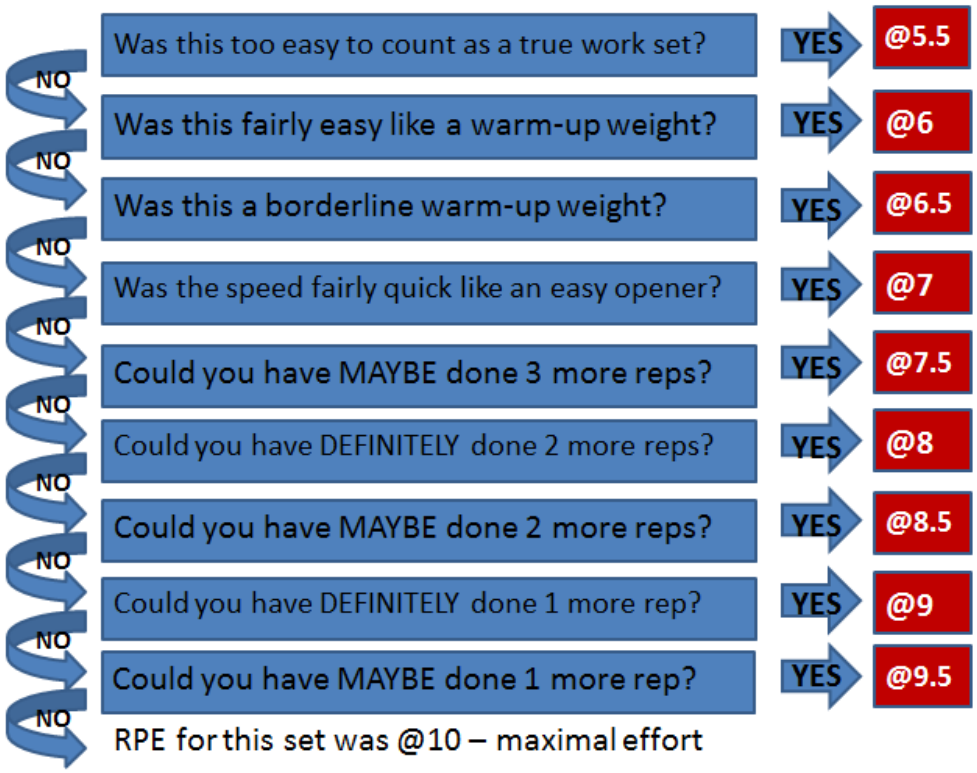


We recommend using them to track the following variables:

1. **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.

2. **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.

3. **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.

4. **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).

5. **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?**
    a. Send an email to support@barbellmedicine.com
2. **When should I use a belt?**
    a. 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?**
    a. We recommend posting a question on our Facebook group or Pain/Injury forum to get specific recommendations to any injury-related problem you may have.
        i. Facebook Group: https://www.facebook.com/groups/BarbellMedicineGroup/
        ii. Forum: https://forum.barbellmedicine.com/forums/pain-and-rehab-q-a-with-dr-derek-miles-and-dr-michael-ray
    b. 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?**
    a. 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?**
    a. 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.
    b. 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 ____?**
    a. 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.

b. 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?**
    a. 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?**
    a. 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.
    b. 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.
    c. 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?**
    a. 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.
    b. Myo-Reps are typically written as "12-15 @ RPE 8, 3-5."
        i. 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.
        ii. The 3-5 denotes the rep range for the back-off sets, which are performed after the activation set.
        iii. 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.
        iv. 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.
    c. Here's a brief explanation on Myo-Reps:

d. 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.
e. 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.
f. 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=0fbeVIIC7SU&feature=youtu.be
- Pin Bench:
https://www.youtube.com/watch?v=RLfnie5wMyA&feature=youtu.be
- How to Bench: https://www.youtube.com/watch?v=1FWDde2IEPg

Deadlift Exercises

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

- Pendlay 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
@vaness_barbellmedicine
@untamedstrength
@michael_barbellmedicine
@derek_barbellmedicine
@hass_barbellmedicine
@charlie_barbellmedicine
@alex_barbellmedicine
@tomcampitelli
@barbellmedicine

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