

RUJUTA DIWANE 28%

DON'T  
LOSE OUT,  
WORK  
OUT!

Don't have time.  
Will workout tomorrow.  
I hate gyms. Its too  
hot for a run. So much  
work. But i diet na.  
Have a presentation to  
finish. Had a late night.  
Alarm didn't ring. I'm not fat! be  
travelling like mad. I don't want  
be a film star. Bad traffic jam.  
I've been ill. Summer holidays  
Oh no! Please! Excuse me!  
Sorry! Not!



WARNING: sitting can be injurious to health

prime reading

## Chapter 3

### Strength Training

*Strength training is the only ‘medicine’ you need for all lifestyle disorders, including diabetes.*

#### **An exercise we don’t know much about**

‘You know, I don’t want to become a body builder, just want to lose some weight and be able to tuck my shirt in.’ ‘Hmm ... no, no, don’t worry, you won’t...’ I began, but was cut short by Sunita exclaiming, ‘40 pounds! This guy Vernon, my trainer, is getting me to push forty pounds on chest press! Saala mera husband se mera arms bada ho jayega.’

The one type of exercise that is riddled with controversy, fear and suspicion is weight training. Close your eyes and imagine a gym, you will see all kinds of body builders training in there. Open your eyes and you will see all kinds of regular people — college students, housewives, hi-flying executives, senior citizens trying to prevent bone loss, etc. In reality, you have to look really, really hard to find a body

builder, and chances are no matter how hard you look, you won't find them. One of the reasons is that, in India, it remains a marginalized poor man's sport; most body builders can't afford to pay the kind of fees you waste every year in your eagerness to commit to making it a fitter 2014 or whatever.

And by the way, the chances of you becoming a body builder because you weight train are as high as you attaining Samadhi because you tried savasana, or winning the Olympics 100m gold because you dashed for the Churchgate fast from platform 3 to 5. Essentially, chill! Dar ke aage jeet hai ;).

So let's get our basics right. As we learned in Chapter 2, we have the responsibility of utilizing and training our anaerobic pathways, and one of the most effective ways of doing this is called 'strength training'. Strength training is defined as use of resistance (for example, in the form of weights) to induce muscular contraction to build strength, anaerobic endurance and size of skeletal muscles. Remember the 'use it or lose it' formula? (I was contemplating on having that as the title of my book.) With age and with wealth, we start using less and less of our

anaerobic pathway, and the only place where we display 'muscle' seems to be in dropping names, pulling favours and getting our kids admission in that latest / greatest / bestest school in our city. For the rest of the time, we are happy to not walk, not lift, pull, push, twist, basically very happy to not move our bodies.

Now for the diabetic capital of the world (I am talking to you) we must know that the biggest precursor of insulin resistance (high blood sugar) is loss of muscle strength. Don't ask me why your doctor didn't tell you this before. Ok, if you must ask, it's not the doctor's job to do so (the doctor's job is to give you goli ;) — it's your trainer or dietician's job. Ya, ya same dietician who told you not to strength train, uske job profile mein baithta hai. Arre baba, also don't ask why your doctor told you to walk instead of strength train. Kya bolu, your doc didn't study about energy systems, biomechanics, after-burn, etc. Now ideally, with all that money at your disposal, you should have an exercise physiologist to go to, but we have none in India. And then there are people like me, sports nutritionists who have some understand-

ing of exercise physiology, biomechanics, kinesiology, etc., but then other than me, I don't know of anyone else. Woohooo ... so self-obsessed I am, and that is a sign of ageing. So I better run to the gym quickly and lift some weights; nothing arrests ageing like strength training does.

But then, you don't have to go to the gym to strength train; strength training only employs resistance to induce muscle contraction. So if the definition is confusing you, how about this — when you panja ladao, you strength train. When you push against a wall, the wall provides the resistance against which your pectoral muscles (chest) contract and that qualifies as strength training too. So does carrying a baby: the weight of the baby provides the resistance against which the muscles of your back, arms contract. And that's exactly why as the baby grows it gets tougher to carry, because the muscles don't have the required strength to contract against the increasing resistance (baby's increasing body weight). Walking uphill can qualify as strength training too; so will learning to lift your thighs off the floor in urdhva mukha svanasana.

**Qualifying as strength training though is not enough, you must make it work for you,** and it should meet your training goals (fat loss ... FAT loss — to be sung like the tune of Sachin ... SACHIN). And that's where gyms come into play with all their machines, etc., to help you train with weights lower than your body weight and with controlled movements to prevent injuries.

But for your workout to be effective, it must be planned properly. Which means you can't enter the gym and randomly declare, 'Chal aaj chest marte hai', or fool yourself into believing that twenty-five squats in the bathroom will give you a toned butt. Training after all is serious business and if you want tangible results out of it, you must be prepared to put in tangible efforts. So here goes, a crash course for you 'no time for love, no time to train' people.

## **Strength training in practice — from knowing to doing**

Anyway, I am assuming that you are now adequately brainwashed and are now seriously going to gym, I mean you really want to. With all this science you can't turn your back on it anymore, khali time ka lafda hai. So I am gonna help you plan your strength training routine. It takes very little time you

know — and you can start with as little as an hour every week. The most important thing that you need to remember about strength training, however, is intensity. Just going to the gym and doing time pass activities like running around with a weight in hand, or doing endless crunches, or using very light weights and working on only selective muscles, etc., will not lead to any of the benefits of an anaerobic workout. A gym workout needs to be planned properly (common sense again is the golden rule), and let's look at how to do that:

1. Common strength training terms
2. Rules to plan the sequence in a strength training workout
3. Designing your workout and sample training plans
4. Guidelines to make progress

## **1. Common terms used in the gym**

*Set:* The number of times you perform a certain exercise is called a set.

*Reps:* The number of times you lift the weight is called repetitions or reps.

*Form:* The correct technique to lift the weight or to contract muscles against resistance.



*Rep range:* Deciding the number of times you will lift a certain weight for all the sets. Typically the rep range is used to classify training as either 'light' or 'heavy', and not the weight you are lifting.

Between 3 to 5 reps per set is heavy

8 to 10 reps per set is moderate

12 to 15 reps per set is light

15 to 20 reps per set is very light

*Split:* The pattern in which body parts are 'split' for training in a week. For example, if you train the upper body one day and lower body on another, you are on a 2-day split. If you are training full body together once a week, you are on a 1-day split.

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### **Technical note — Heavy, light or moderate**

It's not the weight but the energy pathway that is employed to lift a weight and its associated oxygen debt and lactic acid production that qualifies a training session as heavy, moderate, light or very light. Light (or very light) weight training involves contracting muscles up to 20 reps with good technique; this uses the aerobic pathway (as the load is light) and creates little or no oxygen debt. So even if you lifted 100 kilos on the leg press but lifted it with good technique for 20 reps and without reaching fatigue, it is very light weight training, irrespective of your gender.

Heavy weight training, on the other hand, is when you can lift only 3 to 5 reps with good form. Most of us beginners reach that point with as little as 2 or 5 pounds on the side laterals that train the middle deltoid (shoulder). So 5 pounds may seem 'light' but it has employed the anaerobic pathway for contracting the muscles involved and is therefore 'heavy' due to EPOC and other factors. This same 5 pounds on a lunge could allow you to do 20 reps and therefore qualify as light weight training as it has employed the aerobic pathway for the muscles involved.

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## **2. Rules to plan the correct weight training sequence**

There are certain rules that need to be followed so that your time spent in the gym is most effective. These are:

1. 1. Warm-up should be specific to the main workout
2. 2. Exercise should recruit maximum number of muscle fibres
3. 3. Duration of workout should never exceed 60 minutes

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## **Technical note — Exercise and immune system**

Typically, any time there's cellular damage either because of virus or a wound, there is an associated immune response. However, the response to the different types of injuries is quite similar. There's an increase in white blood cells, natural killer (NK) cells and T-cells (fighter of infections).

Now believe it or not, exercise is a physical stressor and has an immune-suppressing response. This is especially true if the duration of exercise is longer than 60 minutes. Spending longer than 60 minutes in the gym either at one go or by doing things like working out twice a day decreases the number of NK and T-cells. This effect lasts for up to 72 hours post exercise, making you susceptible to infections, flu, etc. The exact opposite of getting fit.

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### **Summary of rules to plan your strength training workout:**

Basic rules	Instructions for sequence of strength training workout	Examples / Comments
1. Specific warm-ups	i. Perform warm up set of 12-15 reps before workout set ii. Use 50% of the main workout weight iii. Rest for 30 seconds to 3 minutes before starting main workout set	– Warm-up allows the blood flow to move through the specific muscle groups and warms up the specific joints that will be trained
2. Maximum muscle fibre recruitment	iv. Train large muscle groups before small muscle groups v. Train multiple joints before single joints vi. Perform higher intensity before lower intensity exercises vii. Allow for adequate recuperation between two weight-training sessions	– Back before biceps – Squats before leg extensions – Chest press before flies – After-burn and recovery continues for 36-48 hours after weight-training session

Basic rules	Instructions for sequence of strength training workout	Examples / Comments
3. Duration should not exceed 60 minutes	viii. Perform about 8-10 sets in total (excluding warm-up) that train major muscle groups ix. Perform 8-15 reps per set, with good form and to a point of fatigue x. Use both multi- and single-joint exercises	– Glycogen stores don't last beyond 60 minutes, usually 30 minutes – After glycogen stores are over, body starts breaking down muscle protein

### Least important, most seen

The 'concentration' curl, where the guy sits on the bench smiling at the camera, his elbow flexed, a dumbbell in his hand moving to-

### **3. Designing your workout and sample training plans**

Our body can be roughly divided into the upper body and lower body. Everything hips and lower is considered the 'lower body' or 'legs' in gym lingo. Everything above the hips is 'upper body'.

The 'upper body' is further divided into pushing and pulling muscles. The pushing muscles are chest, anterior deltoid (front portion of your shoulder) and triceps (the back of your arm), and the pulling ones are your back, posterior deltoid (back of the shoulder) and biceps.

So, based on this, you can split your workout per week as:

**1-day split:** Full body workout once a week

**2-day split:** Upper body one day and lower body on the other

**3-day split:** Lower body one day, pushing muscles second day and pulling muscles third day

For each of the muscle groups there are certain exercises you can perform in the gym. The most common exercises, along with muscle types, the number of joints involved, etc., are presented for easy reference in the table below.

**THE reference table for strength training**



<b>Muscle group (from big to small)</b>	<b>Exercise(s)</b>	<b>Free / assisted on machine</b>	<b>Joints involved</b>	<b>Compound / Isolation</b>
<b>1. Legs</b> – Note that compound exercises on legs use all the muscles of the lower body as well as the core.				
<b>Glutes (hip muscle)</b>	<b>Squats Lunges Step ups</b>	<b>Free, done with a barbell on shoulders</b>	<b>Hip Lower back Knee Ankle</b>	<b>Involves multiple joints to flex (bend) and extend (open out) simultaneously, so compound. Compound</b>
	<b>Leg press</b>	<b>Machine with plates / stack</b>	<b>Machine reduces involvement of lower back but hip, knee, ankle active</b>	
<b>Quads (front of the thigh)</b>	<b>Leg extension</b>	<b>Machine</b>	<b>Knee</b>	<b>Isolation</b>
<b>Hamstring (back of the thigh)</b>	<b>Stiff leg dead lift</b>	<b>Free with barbell in hand</b>	<b>Hip &amp; knee</b>	<b>Compound</b>
	<b>Leg curl</b>	<b>Machine</b>	<b>Knee</b>	<b>Isolation</b>

Gastroc and soleus (calf muscle)	Calf raises Toe raises	Free with BB/DB or with machine	Ankle	Isolation
Adductor (outer thigh) Abductor (inner thigh)	Adductor  Abductor	Mostly machines or done lying down (all side-kick varieties)	Hip	Isolation
<b>2. Back</b>				
Erector spinae (lower back, the muscle that runs parallel to the spine)	Dead lift  Back extension	Similar to the squat but BB held in hand vs on shoulders.  Lying on floor/bench	Lower back Hip Knee Ankle  Lower back	Compound  Isolation
Lats (middle back)	Bent over row 1 arm DB row T bar rows Lat pull down Seated row Pull ups*	Machine and/or free  *mostly on machine as most of us too weak to do 8 - 12 reps	Back Shoulder Elbow	Compound – moves through many joints
Traps (upper back)	Shrugs	Free with DB / BB	Shoulder blades, Shoulder	Isolation



3. <b>Chest</b> - Sometimes also called as upper & lower pec to mean upper or lower part of chest.				
Pecs (Chest muscles)	Chest press Incline/ Decline / Flat DB or BB press Push up  Flies	Machine Done on a bench  Free but most not strong to do 8-12 with good form Can be done both free using DB or machine	Chest Shoulder (front) Elbow  Involves lower back & other core muscles too  Shoulder	Compound – moves through many joints  Compound  Isolation – uses primarily one joint
4. <b>Shoulders</b> or Deltoid – has 3 heads or parts – back (posterior), middle & front (anterior) of the shoulder. Every upper body exercise will involve the deltoid. Training the back involves the p.delt & chest the a. delt. Depending on the choice of back & chest exercise, shoulder involvement varies.				
Posterior delt (back)	Rev fly	Free & machine	Shoulder	Largely isolation exercises – involves only one joint
Middle delt (middle)	Side laterals	Free & machine		
Anterior delt (front)	Front raises Overhead- presses*	Free & machine		*Overhead press is compound as it uses elbows too along with shoulders

5. <b>Arms</b> - Every upper body exercise will involve arms. The back involves the bicep & chest the tricep.				
Tricep (back of the arm)	DB extension  Pushdown	Free  Free or machine	Elbow  Shoulder Elbow Wrist – small involvement	Isolation  Compound
Bicep (front of the arm)	Curls of all types	Free / machine	Elbow	Isolation

Below is a suggested set of guidelines that you can use to design your gym workout:

- • If you have never worked out before, start with a 1-day split
- • After 10 workouts, if you are up to it, move to a 2-day split
- • After 12 weeks of the 2-day split, move to a 3-day split. If you don't feel like it, continue with the 2-day split
- • Weight training twice a week is extremely efficient for making gains in strength, BMD and loss of body fat.
- • If you feel like it, you can also do:

Week 1 – Full body (1 day)

Week 2 – Upper body and lower body (2 days)

Week 3 – Lower body (1 day)

Week 4 – Upper body and lower body (2 days)

Week 5 – Upper body (1 day)

Week 6 – Upper body and lower body (2 days)

This way you can make twice-a-week investments every alternate week but keep up with a routine without getting bored.

## **Sample strength training plans**

### **1-day split OR Beginner's plan**

Exercise	Target muscle group	Sets	Reps
Leg press	Quads, glutes, hamstrings	2	12-15
Leg extension	Quads	1	12-15
Leg curl	Hamstrings	1	12-15
Lat pull down	Lats (back), traps, post. delt, biceps	1-2	12-15
Seated row	Lats (back), traps, post. delt, biceps	1	12-15
Dumbbell / Bar press	Pecs, ant. delt, triceps	2	12-15
Pec dec / fly	Pecs	1	12-15
Side laterals	Middle deltoid	1	12-15

## 2-day split OR Intermediate plan

Exercise	Target muscle group	Sets	Reps
<b>Lower body</b>			
Squats	Glutes, quads, hams, adductor, abductor, calf	2	10-12
Leg press	Quads, glutes, hamstrings	2	10-12
Leg extension	Quads	1-2	10-12
Leg curl	Hamstrings	1-2	10-12
Calf raises	Gastroc	2	10-12
<b>Upper body</b>			
Lat pull down	Lats (back), traps, post. delt, biceps	1-2	10-12
Seated row	Lats (back), traps, post. delt, biceps	1-2	10-12
Hyper extension	Erector spinae	1	10-12
Dumbbell / Bar press	Pecs, ant. deltoid, triceps	2	10-12
Pec dec / fly	Pecs	1-2	10-12
Side laterals	Middle deltoid	1 -2	10-12
Dumbbell curl	Biceps	1	10-12
Tricep push down	Triceps	1	10-12

## 3-day split OR Advanced plan

Exercise	Target muscle group	Sets	Reps
<b>Lower body</b>			
Squats	Glutes, quads, hams, adductor, abductor, calves	2	8-10
Lunges	Glutes, quads, hams, adductor, abductor, calves	2	8-10
Leg extension	Quads	1	8-10

Stiff leg deadlift	Glutes and hamstrings	2	8-10
Leg curl	Hamstrings	1-2	8-10
Standing Calf raises	Gastroc	1-2	8-10
Seated calf raises	Soleus	1-2	8-10
<b>Pulling muscles – back, post. delt, biceps</b>			
Barbell row	Lats (back), traps, post. delt, biceps	2	8-10
Lat pull down	Lats (back), traps, post. delt, biceps	2	8-10
Shrugs	Traps	2	8-10
Reverse pec deck	Post. delt	2	8-10
Barbell curl	Biceps	2	8-10
Hammer curl	Biceps	1	8-10
<b>Pushing muscles – Chest, ant. delt, triceps</b>			
Incline / decline DB press	Pecs, ant. delt, tricep	2	8-10
Flat machine press OR seated chest press	Pecs, ant. delt, tricep	1	8-10
Pec dec / fly	Pecs	2	8-10
Overhead DB press	Pecs, ant. delt, tricep (more involvement of ant. delt)	1	8-10
Side lateral DB	Middle deltoid	2	8-10
Cable push down	Triceps	1	8-10
DB extension	Triceps	1	8-10

Note: Exercise list is indicative and not exhaustive. Exercises to be performed in the order mentioned.

## Choosing the right trainer

eat rice post workout, your body will look up the BCAA structure in them and put them to good use, making glutamine out of it and keeping your immune system from failing. Get it? (And single polished or hand pounded whitish rice is much better than brown rice, read my earlier books for details.)

## Chalo, quick recap:

<b>Pre-workout meals</b> Gap of 20 minutes or less before workout <ul style="list-style-type: none"> <li>• Fruit</li> </ul> Gap of 60-120 minutes before workout <ul style="list-style-type: none"> <li>• Homemade breakfast</li> <li>• Homemade lunch</li> <li>• Grilled veg sandwich</li> </ul>	<b>How it helps</b> <ul style="list-style-type: none"> <li>• Keeps blood sugars stable during workout</li> <li>• Blunts cortisol response during and post exercise</li> <li>• Allows quicker delivery of glycogen to working muscle group</li> <li>• Minimizes muscle tissue damage</li> </ul>
<b>4 R's post workout</b> (within 20, max 45 minutes) <ul style="list-style-type: none"> <li>• Water</li> <li>• Banana / potato / seasonal fruit</li> <li>• Protein shake (whey)</li> <li>• Vitamins C, E, A, minerals – Se, Zn, Cr</li> </ul>	<ul style="list-style-type: none"> <li>• Makes up for fluid and electrolyte losses during workout</li> <li>• Replenishes glycogen stores and shifts metabolic machinery from catabolic to anabolic</li> <li>• Reduces muscle damage and boosts immune response</li> <li>• Speeds up muscle and systemic recovery</li> <li>• Speeds up elimination of exercise by-products</li> </ul>
<b>4 hours post workout</b> Wholesome meals after 1 hour of 4 R's and every 2 hours after that <ul style="list-style-type: none"> <li>• Poha / upma / idli / dosa / paratha / nachni sarva</li> <li>• Dahi / chaas / fruit</li> <li>• Paneer paratha / rice-dal-sabzi / veg pulao-raita / roti-sabzi-dahi</li> </ul>	<ul style="list-style-type: none"> <li>• Maintains increased insulin sensitivity</li> <li>• Sustains the anabolic state</li> <li>• Prevents muscle breakdown and accelerates tissue repair</li> <li>• Allows for maximum glycogen replenishment</li> <li>• Repays O<sub>2</sub> debt and clears out lactic acid</li> <li>• Prevents and repairs neurological damage or damage to motor neurons</li> <li>• Speeds up fat metabolism</li> </ul>