

kBox Flywheel training

User guide

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INTRODUCTION

Flywheel training is not a new concept. First studies using flywheels for resistance in training were conducted in 1920s. The concept re-emerged in the late 1980s when Swedish scientists with The Karolinska University in Stockholm developed a flywheel device to help astronauts to maintain skeletal muscle strength and mass in space. The problem with atrophy and strength loss after spending time in microgravity was well known early in the space era but until then the problem had been unsolved and different approaches unsuccessful.

The benefit of using a non-gravity dependent device in space is obvious but the benefits go far beyond that and can improve efficiency in strength training on Earth just as much. Today flywheel training regimens are used by many athletes on different levels in a number of different sports, in rehabilitation of patients and athletes and in basic strength training in the segment of fitness and health. This text will clarify the basic principles of strength training on the kBox, describe different basic exercises and help you getting started with your first training programs.

KBOX AND FLYWHEEL TRAINING

kBox offers a few unique and beneficial features that makes it a superior tool in strength training. Here is a summary and a more details explanation of strength training and strength training effects is offered later on in this guide:

- **Variable resistance.** The load adjusts to your strength and intensity which allows you to train without the need to adjust the load when you are getting tired, between warm-up and strength training or when you train with a partner to the same extent as with weights.
- **Eccentric overload** is a key feature that allows for fast and robust gains in strength. This is something that is fairly complicated to get when using gravity based training tools but very accessible and safe on the kBox.
- **Wide loading spectrum** where you can train both the concentric and eccentric actions but also the isometric actions and get strong all over the range of motion both then lifting and resisting on the way down in the movement.
- **Practical** since the flywheel device has no need for heavy weights and a as result the system is light and easy to bring outside, to the office or countryside. It's also easy to store when not being used. It is also quiet which allows you to do heavy strength training at home even if you live in an apartment without disturbing family or neighbours.
- **Biomechanical advantage** where hip belts and harnesses unloads the spine which allows you to train safer and harder.



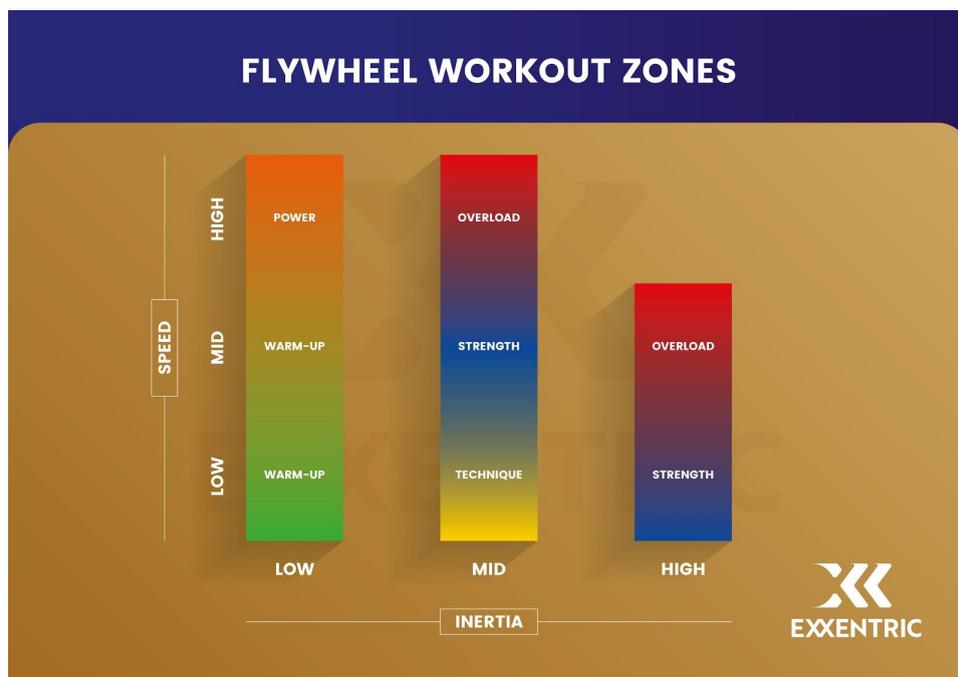
GETTING STARTED

To train on your kBox you will always have to go through these simple steps:

- Select inertia
- Select accessory
- Set range of motion
- Selection position

SELECTING INERTIA

The selected inertia together with the intensity (speed) you work in will set the load. This is explained in the *Flywheel workout zones* below. Remember that low, medium and high inertia is relative to the exercise. Low inertia in one exercise might be a high inertia in another.



Technique. In a new exercise use a medium inertia and low intensity. Fast is more technical and as a novice you want to get it right at a lower pace before going faster and increasing the load.

In the technique zone, if you increase intensity you end up in a typical strength training zone. Here you will only be able to maintain force and power for a limited amount of repetitions (1-20).

Power training is performed with a low inertia and maximal velocity. This is more technical than training in the strength zone.

For warm-up just go with a really low intensity, preferably at a low inertia so the speed of the movement is not too slow.

SELECT ACCESSORY

Depending on which exercise you want to:

- select the corresponding grip for the exercise
- open the snap shackle by pulling the “Pull to release”-tag
- insert the accessory
- close the snap shackle.

SELECT POSITION

Since the kBox allows for a very free angle of pulling side to side but more limited back and forward selecting your stance (ie position) on the kBox can be important. Consider how the exercise is being performed and how you are going to move during the whole range of motion. Adjust your position and if you face the flywheel side or the short side to minimize the pulley block traveling back and forth which creates friction and unnecessary wear on the drive belt. [PIC]

SET RANGE OF MOTION

With the kBox you set the top position in the range of motion. This is where the shaft no longer contains any drive belt and the spinning motion in the flywheel will start to retract and pull you down again.

To set top position follow these steps:

- Take out all the drive belt from the shaft.
- Push the drive belt release button with your foot to release the belt lock and go to the top position of the exercise where you want it to stop and start pulling you back. The retract will either pull the drive belt in if you go to a lower position or let you pull out belt if you go to a higher position.
- When you found your top position release the pressure on the drive belt release button and make sure the belt lock locks in.

CAUTION!

- Never stop in top position when the flywheel is spinning!
- Do not step of the device as long as the flywheel spins. Stop the flywheel before you disconnect or step off the device.

Exercises

Squat

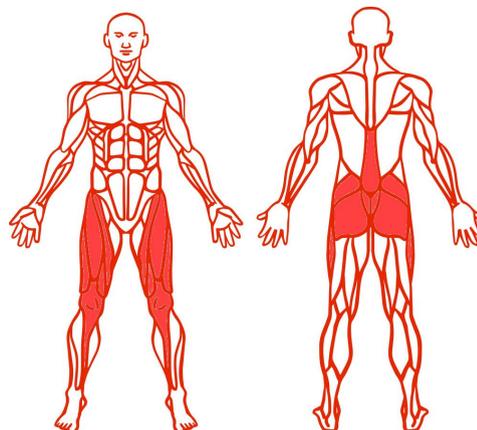
Variations: harness/belt squat, front/zercher squat, split squat

Accessories: harness, hip belt, kBar

Execution: sit down without having your upper body folding down or forward too much and then stand up again by extending knees and hip into full extension.

Compound movement that involves most muscles in the lower body since it includes movement over the hip, knees and ankles. Depending on depth and which variation you do you will target the involved muscles differently. For health and fitness goals a deeper squat is preferred.

Harness and belt squat unloads the spine and back. Belt squat give a higher focus on the quads since most of the hip extension and all upper body extension is taken away.



Front loaded squat (kBar on the chest or in a snatch grip) or a Zercher squat with the kBar resting in your elbow pit adds load to the upper body, mainly upper back, shoulders and arms but also more load on the lower back and core.

Split squat demands more balance and postural control. Great addition if you are doing sports with back and forward movements as tennis, badminton or similar.

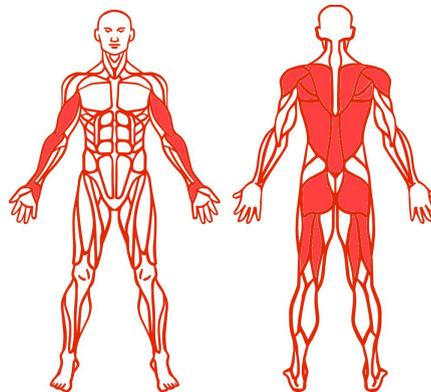
Deadlift

Muscles involved: hamstrings, quadriceps, gluteus, lower back and arms.

Variations: standard deadlift, sumo or the Romanian deadlift (RDL; also called 'stiff-legged deadlift').

Accessory: kBar, kGrip(s).

Execution: much like a squat you sit down but allow for a little more folding of the upper body and let the bar slide down as close to your thighs and chins as possible. Extend the body again. The RDL is executed with as little bend in the knees as possible.



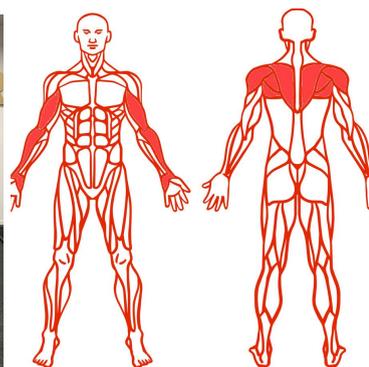
Great exercise activating more or less the whole body. Works lower back and the posterior of the thighs (hamstrings) and glutes. Also work arm, shoulder, upper back and grip strength. The RDL variation works the posterior chain even more but the quadriceps less. RDL can also be done in a single leg variation or using only one grip to increase rotational load through knees, hip, shoulder and core.

Bent-over row

Variations: Standard and semi-seated, single or double grip.

Accessory: kBar, kGrip(s), Angle adjuster for semi-seated.

Execution: Sit down into a quarter squat, slightly bent forward with extended arms in front of you and pull hands towards you and the belly button with elbows going close by the body.



Straight arm lift

Variations: Single or double grip.

Accessory: kBar, kGrip(s).

Execution: stand straight up, hold kBar or grip with extend arms and let it rest against your thigh. Lift the bar or grip while keeping arms extended until the hands reach the height of your eyes.

Triceps extension

Variations: Single or double grip.

Accessory: kBar, kGrip(s).

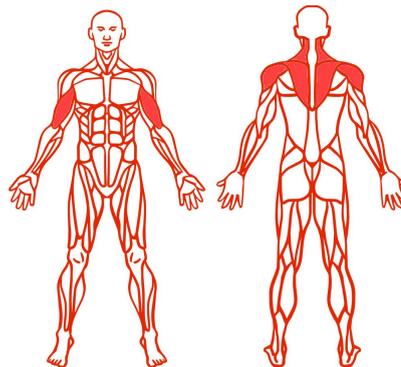
Execution: Sit on the short side of the kBox with the kBar behind your head, and your elbows in level with your eyes. Extend arms until elbow is straight.

High pull (upright rowing)

Variations: Wide grip (kBar), narrow grip or inverted (kGRips).

Accessory: kBar, kGrip(s).

Execution: stand straight with arms hanging straight down with the palms towards your body, pull the bar/grip up towards the chest.

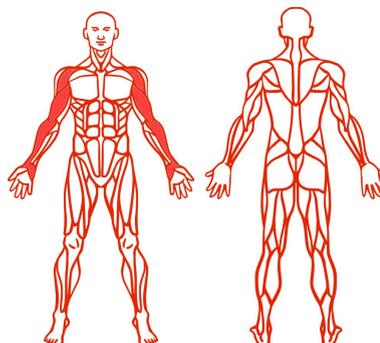


Biceps curl

Variations: standard, single grip or reverse grip

Accessory: kBar, kGrips.

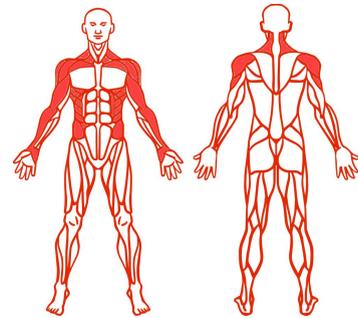
Execution: stand straight with arms hanging straight down with the back of your hands towards your body. Curl the bar/grip up towards your chin.



Lateral flexion

Accessory: kGrips

Execution: Starting position basically like you carry a bag of groceries. Face the flywheel but stand beside the opening in the kBox. Hold the grip and start with the hand at the mid portion of the outside of your thigh with a completely straight arm. Flex your whole upper body away from the grip and then back down.

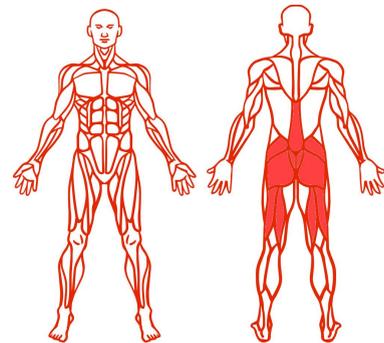


Hip extension

Variations: Standard with harness, kBox swing using kGrip(s).

Accessory: harness, kGrip(s).

Execution: to do standard variation with harness fold forward and bend knees slightly and then focus on extending your body by pushing the hip forward.



Scaled down drill to target the posterior chain while unloading the upper body, arms, grips and shoulder compared to the RDL or deadlift. In standard very focused on the work around the hip but in the swing variation also more balance and muscular work for your arms and shoulders.

For more exercises go to

<https://exxentric.com/flywheel-training/exercises/>

The First Training Program

For a novice starting to do resistance training it is much as much as getting familiar with the exercises and getting a new habit as actually strengthen the muscles. In this case we would like to recommend a full-body workout done 2-3 times a week with the focus on performing the drills the correct way and actually doing the program as often as recommended. When you have set your new habit and learnt the exercises the program can be divided into two or three splits, meaning that you do different exercises or different variations in your different sessions. This way you start with the most standard version of the exercises to learn them and focus on the bigger muscles and compound lifts and then split up to be able to train hard and also pinpoint different muscles more with your training.

kBox Beginner

Squat

Deadlift* 8 - 15 reps

High pull

Biceps curl

Bent-over-row

Push-ups*

Reps 8-15, Sets 1-3, Frequency 2-3 times/wk

*) Sumo variation a easy way to get started. Conventional and RDL works too.

**) bodyweight exercise, same sets and reps but add load if possible when you max reps go beyond 20-25.

After a set either skip on to the next exercise with minimal rest and then repeat the program 2-3 times or do the same exercise for 2-3 sets and then move on.

Do 8-15 repetitions (the higher end of the range recommended ie 12-15) and focus on execution and keep the power output fairly even throughout the set. Don't go max in the start of the set to burn out half way through. Give your neural system, muscle and tendons some time to adapt to the load and balance associated with the different exercises. The most important thing is to get the training done. Better to do one set of 8 reps and go through all exercises in 10 minutes and repeat three time per week than to skip the training completely or do one longer session once a week. This start is about a getting you a new habit.

When you have been able to do the program at least 2 times a week for 3 consecutive weeks you can start focusing more on intensity. Increase intensity and go harder from the start and try to maintain power output through the set. If you drop in force and power in the end of the set that doesn't matter. You can compensate the drop by lowering the amount of reps and stay in the lower range instead (8-12 reps) and try to maintain quality of the movement.

kBox Intermediate (2-split)

If you regularly do >2 sessions per week you can do different programs on different days to enable you to do more variations and train harder. If you train hard once or twice a week and just want to train more you can modify the beginners program and add more sets or exercises to it instead.

	M	T	W	Th	F	S	Su	M	T	W	Th	F	S	Su	M	T	W	Th	F	S	Su	M	T	W	Th	F	S	Su
Example A		1		2			1							2		1		2		1					2			
Example B		1	2			1		2	1			2			1	2				1			2	1			2	

Example A: person doing program A is training less consistently and is better off doing full body workout every session.

Example B: person doing program B is training more consistently and sometimes on consecutive days so training different body parts on different days is preferred.

Program A

Full body exercise every session. Better if your training frequency changes from week to week.

Day 1

Squat
Deadlift
High pull
Biceps curl
Bent-over-row
Push-ups*

Day 2

Zercher squat/front squat
RDL
Triceps press
Lateral flexion
Bent-over-row (single grip)
Straight arm lift

Program B

Different muscle groups on different days. Program B is better if you are training on consecutive days and >2 times a week, every week.

Day 1

Squat
Zercher squat
Deadlift
RDL
Triceps press
Biceps curl
Push-ups*

Day 2

Squat (any variation)
High-pull
Bent-over-row
Bent-over-row single grip
Lateral flexion
Triceps press
Push-ups*

Reps 8-15; Sets 1-3; Frequency 2-4 times/wk.

*) bodyweight exercise, same sets and reps but add load if possible when your max reps go beyond 20-25.

In the two-split you do different exercises on different days. Program A splits are both working most of the body basically to offer some variation while program B is focusing more on either lower or upper body. Besides for offering variation doing exercise variations can add complexity, add more balance or pinpoint some areas you want to strengthen, for example the RDL gives more attention to the posterior chain than just doing regular deadlifts and the single-grip row add core stability training to the exercise.

For the new exercises and variations go with higher reps 12-15 and continue with the lower reps for the ones you know better. This is also a way to periodize your training so you get less load but more volume in some sessions and more load and less volume in the other. With 12-15 reps you won't be able to pull as hard so the average load goes down but the volume (sets x reps x load) is higher.

If you are doing program B and have to take time off from training or train with a very low frequency it's recommended you switch to a full body program during that period or when you get back to training.

Future programs

This base can be modified and work for a long period of time. Take out one exercise, replace it with a variation or add new ones. Add inertia and start doing sessions with 5-8 reps with max force and mix that with the standard program and low inertia sessions where you go for max power and speed doing 6-10 reps. At this step it could be useful to get help from a professional trainer to modify the strength training program to suit your goals, needs and limitations and fits you overall training regimen.

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