THE BENEFITS OF HEAVY RESISTANCE-TRAINING FOR RUNNING

Running is King to become a better runner, so why do I engage in strength-training? Adding some heavier resistance-training into my training program has made my running more bouncy and powerful. I weight-train to get stronger muscles per second!

Last year, me and my husband, equipped ourselves with a "Home Gym" (**Picture 1**). This equipment consists of a rack with a 20kg-barbell and accompanying weights, which allows us to engage in basic strength improving movements that activates a lot of muscle groups of the whole body at one time. Old-school exercises such as squats, deadlift, over-head presses, bench-presses, and my favorite movement, the **clean-press**.

Picture 1: Our "Home Gym": a rack with 20-kg barbell, weights ranging from 20 to 2.5 kg, dumbbells, and kettlebells.

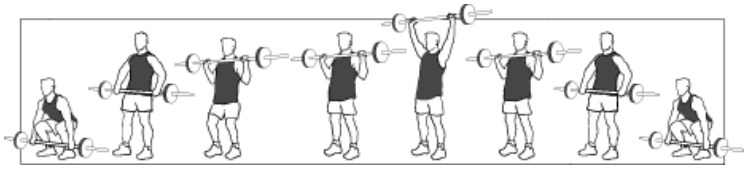
WHY IS THE CLEAN-PRESS MOVEMENT SO EFFICIENT, AND ESPECIALLY SO BENEFICIAL FOR RUNNERS?

What is a clean-press and how is it executed?

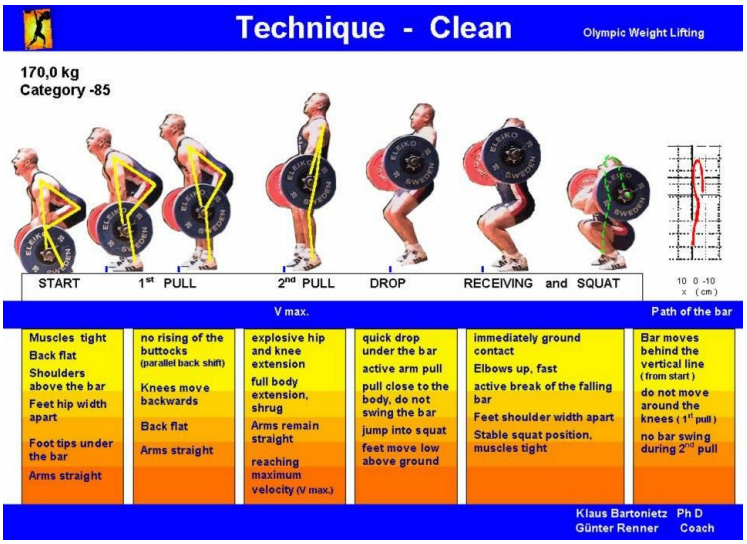
The Clean-Press is one of my absolute favorite exercises (**Pictures 2 and 3**). Clean-presses trains your power development. In this movement, you as a lifter has to create a large momentum to be able to lift the bar from the ground to over your head. To produce this force and power the entire body is called into act, from the muscles in the lower- and upper body to all the support systems. Working weight from low to high, the clean-press movement, is also taxing for the cardiovascular system. I guess that is one reason why I as a runner like this exercise - it is taxing for my muscles at the same time as it raises my pulse ;-).

For runners, the explosive hip- and knee extension in the beginning of the clean-movement helps to strengthen the hip, buttock and lower back (**Picture 3**), whereas the second part where the bar is pressed the overhead, strengthens and stabilizes the core in a functional way.

In this kind of movement, where weight is moved from floor to overhead, there is little room for forced reps, overload techniques, or any form of cheating. You have to be focused and disciplined in choosing weights within your abilities.



Picture 2: The execution of a clean-press. One starts with the bar on the ground or in knee height, works the bar with muscle force generated from the lower body up to the torso, and then with upper body and core muscles overhead to straight arms.



Pictures 3: The Clean-movement and how it is performed in detail. Observe that this infographic describes the heavy-weighted cleans without pressing the bar overhead.

HOW TO INTEGRATE HEAVIER FUNCTIONAL FULL BODY MOVEMENTS INTO YOUR RUNNING PROGRAM?

What is running? What are we actually doing when we are running?

A running stride can be described as a "spring-like" jump off the ground, whereas maintained running would be a series of several jumps in a row.

Ideally our jumping/stride frequency should remain the same independent of what pace we run at. What makes the difference between a fast and slow runner is how much distance they cover in each jump, or stride. A faster runner will cover a longer distance in each jump *versus* a slower runner. A faster runner "jumps" longer in each stride, he creates a higher force in each jump than a slower runner. The rate of force development (RFD) we often refer to **power**. So, the more force we can create in each foot strike, the bigger and longer jumps we can take. However, we have to make sure that we just do not jump upwards but forwards, and here our body posture is important (*body posture will be discussed later in article*).

When we run short sprints we can obtain a high force development. We run powerful and engage a lot muscles of our body to run our fastest. But after a very short while we lose that powerful stride. The muscles are fatigued and we cannot maintain the same speed.

We can train to become more powerful with power training techniques in the gym for example by jumping with weights on our shoulders. But to bring this acquired strength and or improved RFD we need to use exercises that are similar to running in terms of muscle function.

How do I make use of clean-presses?

Before a running workout aimed at improving my speed I use squats and clean-presses as sort of a warm-up. My goal here is to activate and recruit as many muscle fibers as possible, ranging from slow-twitch to fast-twitch.

I do as a little as five repetitions of clean-presses with a 20-kg barbell (*equal to circa 40% my bodyweight*), followed by a short rest of 30-60 seconds, and then I repeat this circuit two to three times. This little activation really makes a difference for my running experience afterwards. I feel that I better can access the power in my muscles while running. Key here, do NOT do too many repetitions or sets. Just think of this session as warm-up and activation. If I do too many repetitions and sets, my muscles get too tired, and instead of feeling more powerful and balanced, I feel flat and wobbly while running.

However, when I want to improve my strength, I put together a circuit of 5-6 different functional movements that works large parts of the body but still different muscle groups. In this workout I do not have the aim to just activate the muscles but the aim to improve their strength. On these strength days I work still with a few but focused repetitions. To tire the muscles, I repeat the circuit several times until the muscles feels a bit powerless. I have learned to stop before being too exhausted since this will affect my training the next day and days to come.

Example of Strength-Circuit:

- 10 x Squats with 20-kg Barbell,
- 10 x Swings with 10-kg Kettle Bell
- 5 x Clean-Presses with 20-kg Barbell
- 6 x One-handed Rows with 10-kg Kettle Bell
- 8 x Biceps curls with 7 kg Dumb bells
- 10 x Push-ups on Handle-Stands

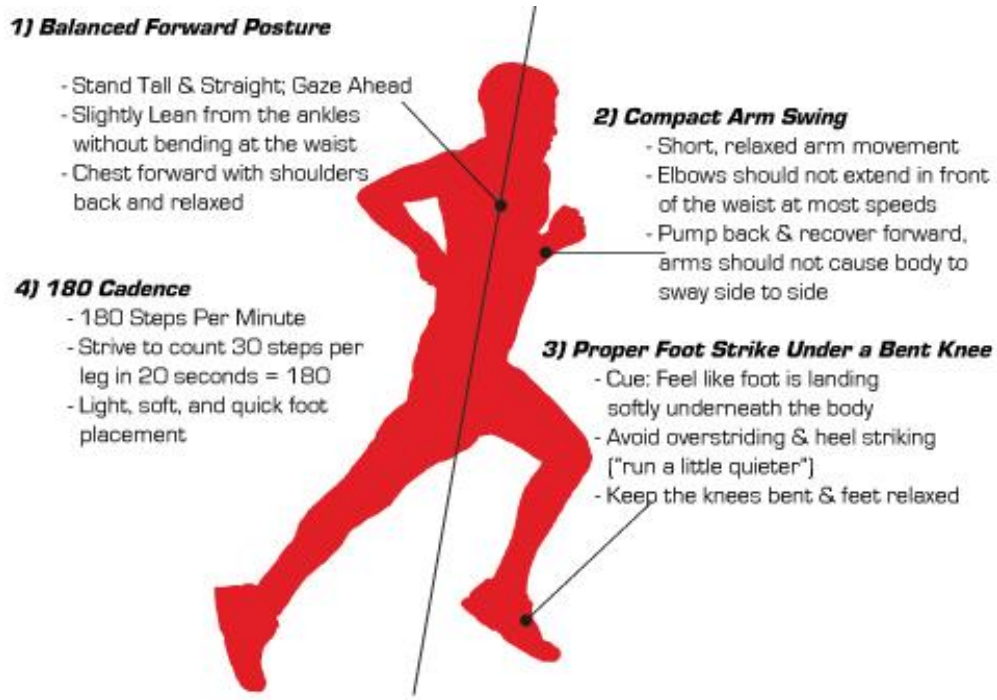
HOW HAS HEAVY RESISTANCE-TRAINING IMPROVED MY RUNNING?

Improved Core Strength, Improved Body Posture, and Improved Running Form

When we run, our core functions as a connector between our upper- and lower body. The core gives stability and it aids in energy transfer. A whole myriad of different muscles helps to stabilize the trunk. How it is stabilized and the degree that each muscle type functions as a spine/trunk stabilizer will change depending on the movements we perform. *So, how should we best train the core for running?*

"Full body movements such as squats and deadlifts provides much higher activation of the core muscles and therefore trains it in a more functional way than crunches, back extensions, planks, and stability ball exercises. The heavier resistance-training increases core strength, while power and plyometric works trains the core to work reactively and absorb and transfer energy". **Steve Magness - Science of Running**

Clean-presses and the other functional heavier full body exercises has improved my running. I feel bouncier in my legs from the momentum training that the clean-press gives me, but this exercise has also improved my functional core strength. On strength-days I would try to stabilize the barbell for a couple of seconds once I have worked the weight over my head. A stronger and more stable core has resulted in better coordination and running form. It helps me maintain a better body posture and a better forward lean from the hips (See **picture 4** below for more details about good running form and blog **Article 3: HOW TO IMPROVE YOUR RUNNING TECHNIQUE**).



Picture 4: Good running form. Picture Courtesy: http://naturalrunningcenter.com/2011/05/23/altra-running-the-learn-to-run-initiative/#

"A popular argument for a strong core is that it prevents an athlete's running form from breaking down. The problem with this logic is that core muscles are not what is fatiguing when racing. The breakdown of form is a symptom of fatigue and happens as a result of fatigue elsewhere. The runner tries to compensate for of fight the fatigue by making changes in their stride, either consciously or subconsciously. During running core muscles are trained at a low level but for a prolonged time. The best way to train the core for the event is probably trough running at various speeds." **Steve Magness – The Science of Running**

A lot of us run in a hunched type of posture that resembles the way we sit. This hunched position slows the running down at the same time as it may be contributing to running problems. Tight hip flexors may also contribute to a hunched posture. My better body posture gives me a better running technique when I do power improving running workouts such as strides, hill sprints, and shorter interval workouts ranging from 100 to 400 meters.

Where do you feel pain after sprint work? I feel it in my hip flexors, lower back, and in my lower abdominal muscles connecting the core and thighs.

HOW TO BRING POWER TRAINING AND RUNNING TOGETHER?

Doing just power training in my home gym will not reduce my personal best on 5K unless I go out and do the running specific workouts with improved strength. So, running is still KING but you might be able to gain more from your running workouts when you engage in classic strength-training exercises such as squats, deadlifts, and cleans.

For future speed development I want to learn the pure Clean-movement and leave out the overhead press. This will allow me to work with heavier weights and it will train the explosive hip- and knee extension.

Being a distance runner, I do not have to concern myself about maximizing power to a large degree with a heavier external load because of the short amount of time for force development to occur when running. Some exercises to consider include squats jumps, split squat jumps, box jumps, and standing long jumps. Very steep hill sprints are another way to train for power, and in a more specific way.

Workout Schematic:

Circuit of 2-4 exercises: (Squats jumps, Split squat jumps, Box jumps, or Standing long jumps) x 1-2 sets

Heavier external weights: 4-5 repetitions for each exercise.

Moderate external weights: 10-12 repetitions for each exercise.

External load: Maximum 30% of your body weight, to no external load. (Me: 50 kg * 0.3 = 15 kg).

Intensity: Training should not be done to failure but be stopped before performance and power drops!

Rest: 30-90 seconds in between reps, and 2-5 minutes between sets.

REFERENCES & RECOMMENDED READING:

Steve Magness, 2014, *The Science of Running: How to find your limit and train to maximize your performance*

www.ScienceOfRunning.com