



BWL Education

Simplifying the use of complexes in weightlifting training

What do we mean by complexes?

In weightlifting terms, a 'complex' is performed by combining two or more different exercises into a single set.

Key Point: In weightlifting, although it includes two separate exercises, the Clean & Jerk is for the most part, considered to be a single lift by many coaches. In this instance, a Clean & Jerk would need to include an additional exercise to be considered a complex (e.g. Clean + Front Squat + Jerk).

What is the purpose of a complex?

Complexes can be used for two main reasons:

1. To improve a specific technical objective

Athletes will often use lighter 'technical complexes' as part of a warm up. This serves the dual purpose of helping an athlete to increase their body temperature and reinforce specific movement patterns, whilst also focusing on improving their skill in a particular phase of the lift.

An example of this would be an athlete performing multiple sets of Snatch + Drop Snatch in order to improve their speed under the bar during the Receive Phase.

2. To improve a specific physical quality

The use of heavier complexes can help an athlete to develop specific strength in a phase of the lift. An example would be an athlete with the objective of improving their postural strength during the First Pull in a Clean. In this instance, an athlete might perform a Clean Pull to Knee followed by a Clean. This would encourage the athlete to focus specifically on improving their positions in the First Pull. The advantage of doing this as part of a complex is the athlete is able to transfer the skill into the full movement immediately afterwards. This reinforces the ultimate goal of trying to improve the full lift and not just improve a portion of the lift.

Coaches may also programme complexes to improve specific physical qualities. A common example of this can be seen when coaches work with beginner athletes who need to improve their **mobility**. In this scenario, a coach may prescribe Power Snatch + Overhead Squat. This complex would allow the athletes to train the positions required in the Pull, whilst focusing on a specific phase of the lift that they need to improve (Receive Phase).

With experienced athletes, coaches may introduce complexes to stimulate improvement in qualities such as **explosive** or **reactive strength**. An example of the latter would be an athlete performing a Snatch followed by a Hang Snatch.

When should they be performed in a training programme?

Complexes can be used throughout a training programme. However, coaches should consider the timing of their use, especially when close to competition.

Generally speaking, more varied complexes (more lifts and/or more repetitions) will be performed further away from a competition. As an athlete moves closer to a competition, they are likely to reduce or eliminate complexes in favour of highly specific training. At this stage athletes will commonly perform heavier singles on the Snatch and Clean & Jerk and significantly reduce the amount of time spent on performing derivatives of the competition lifts.

What are the potential risks with using complexes?

When prescribing any exercise in a training programme, coaches will need to consider the principle of specificity. The human body adapts to the specific stresses that it is exposed to. Poorly prescribed complexes will not result in the intended adaptations.

An example of this would be a complex that includes: Strict Press + Power Jerk + Push Press + Split Jerk + Behind Neck Jerk. This complex lacks a clear objective and would be challenging for the athlete to execute effectively due to intra-set fatigue.

Key Point: The ability of an athlete to execute a lift well is just as, if not more important than the effective prescription of a complex. A coach may prescribe an appropriate intervention, but if an athlete performs the exercises poorly, they are unlikely to benefit from its intended effect.

Are there any other advantages of using complexes in training?

Group training is becoming more and more popular in the sport of weightlifting. This throws up the challenge of programming for the needs of the group versus the individual. Complexes can provide a happy medium by allowing athletes to personalise a lift based on their unique needs.

An example of this would be in a session where the main focus is the Snatch. A coach can prescribe different variations of the Snatch or utilise complexes to help athletes balance their unique needs with those of the sport/training session.

e.g. Two athletes are paired with each other on the same platform.

Athlete A's focus is to improve their mobility in the Receive Position. The coach prescribes Snatch + Overhead Squat x 2.

Athlete B's focus is to improve their ability to generate force in the Second Pull. The coach prescribes Power Snatch + Hang Snatch.

Coaches also have the opportunity to pair athletes of different skill/strength levels together and programme complexes that effectively work as a handicap to make a session more competitive. An example of this would be grouping two athletes together who are 10kg apart on the Clean & Jerk. Both athletes have been programmed to lift the same weights. However, Athlete A performs a Clean + Front Squat + Jerk and Athlete B performs a Clean + Front Squat x 3 + Jerk. This can help to make a training session more competitive.

What are examples of complexes that coaches and athletes might use in training?

We picked the brains of BWL staff members, Stuart Martin and Owen Boxall, to see how they use complexes in their training.

Stuart Martin – BWL Pathway Manager and Coach

Stuart likes to use certain complexes in preparatory periods of training to help improve an athlete's capacity.

The complexes will often progress in a linear fashion (increasing intensity with a reduction in volume) over a period of weeks.

An example Clean & Jerk complex:

Week 1: Clean x 2 + Front Squat x 2 + Jerk x 2 – 75%

Week 2: Clean x 2 + Front Squat x 2 + Jerk – 80%

Week 3: Clean x 2 + Front Squat + Jerk – 85%

Week 4: Clean + Front Squat + Jerk - 90%

Athlete's will typically perform 10-20 reps per session (Clean + Front Squat + Jerk = 3 reps).

Owen Boxall – GB Athlete and Coach

One of Owen Boxall's favourite complexes is a Snatch High Pull + Snatch. "The temptation is to try and get under the bar as soon as possible, which often means I don't extend as much as I should. I feel like performing the Snatch High Pull + Snatch complex helps reinforce my ability to reach Maximal Extension, which helps me feel more confident when I approach heavier Snatches."

Owen suggests performing doubles (Snatch High Pull + Snatch = 1 rep) at approximately 70% of your best Snatch as a starting point. Owen's best Snatch is 160kg and he typically performs this exercise with 110-120kg (which just goes to show you do not have to perform complexes with maximal weights to see the benefits). He usually performs this complex in periods of transition between training blocks, well outside of competition.

Summary

Complexes can be a great tool to help athletes improve specific areas of technical or physical weakness. Coaches should be mindful that the more varied the exercises are in a complex, the less likely an athlete will be to improve a specific area of the lift. This may be acceptable in times where the coach is happy to programme variation for the sake of providing a novel stimulus (e.g. after a competition). However, it is not likely to elicit the specific adaptations that an athlete is seeking to improve their performance in the competition lifts. It is for that reason that the general rule of thumb should be to keep complexes simple!