

Weightlifting in training for athletics – Part I

By Martin Zawieja-Koch

Top performance in most disciplines in athletics requires the athlete to optimise his/her strength capacity. The same, of course, is true in the sport of weightlifting. There, the relatively closed movements and controllable environment that characterise the sport facilitate the study of both biomechanics and training principles and thus, the science of the sport is quite advanced. As one result, successful weightlifters recognise the importance of correct technical execution of all movements and focus on this aspect in their training. In this article, the author, an Olympic medallist in weightlifting who now coaches, seeks to make the connection between the contemporary form of training in weightlifting and athletics, particularly in the area of general strength development. Making use of his knowledge and experience, he identifies the application of specific exercises and their variations as used by weightlifters to the general strength requirements of the event groups, and even specific events in athletics. He provides detailed explanations of the exercises athletes should use in their strength training, including descriptions of the movement, objectives, didactics, fault identification and suggestions for correction. Because of its length and the number of illustrations, this article will be presented in two parts, with part 2 appearing in the next issue of NSA.

ABSTRACT

Martin Zawieja-Koch is a German National Coach in weightlifting responsible for the national women's team, the national junior team and the national coach education programme. He has collaborated with the coach education programme of the German athletics federation (DLV) in the area of strength training by giving numerous seminars for athletics coaches. A two-time Olympian in weightlifting, he won a bronze medal in the Super Heavyweight class at the 1988 Games in Seoul.

AUTHOR

Fields of application

Weightlifting, including its training exercises, forms a cyclic, closed movement and is hence affected by few negative influential factors. The sport can be well planned and analysed. Not only is this true for the field of biomechanics referring to the movement, but also for the field of training principles and training planning.

Apart from special strength exercises and various implements for strength training, the barbell is the dominant implement for the development of strength abilities in athletics. In serious sport, it is of special importance to use barbell exercises. These exercises do not differ in their execution of movement and methodical approach between sports.

Table 1: Fields of application of barbell exercises in athletics

THROWS	JUMPS	SPRINTS
snatch clean pull to chest (broad grip) pull to navel (narrow grip) squat front hold squat back hold	snatch pull to chest (broad grip) squat front hold squat back hold	pull to chest (broad grip) squat front hold squat back hold

The selection of training exercises in weightlifting has been defined in a catalogue of training means (Lippmann 1991). In this catalogue, all training exercises are presented in a graded complexity. Application to the various event groups in athletics is also considered in a differentiated way. The throws take up the greatest part, followed by the jumps and sprints. All events make use of training exercises with the barbell that are focused on the lower extremities. In the throws and jumps, complex training exercises for the complete chain of extension (hip and knee angle) are applied. In Table 1 we can see an overview of the fields of application.

The lower number of training exercises in the jumps and sprints reflects the profile of the events. Training exercises like the clean and the pull to the navel (narrow grip) require a high degree of stability due to the very demanding level of intensity. This requirement can only be realised with difficulty by athletes with a limited mass of muscles / body weight (jumpers and sprinters) and could lead to strain symptoms, which can influence the effort / use effect negatively. The very limited range of exercises in the sprints is due to the requirement to merely condition the lower extremities in the field of maximum strength development.

Differences in the special application

Weightlifters often acknowledge variations in the execution of movements in the special application of the weightlifting exercises described in Table 1. These exercises have developed in such a way due to various requirements, the following being one example.

The special application of half squats referring to the event-specific requirements:

There are various opinions that can surely be discussed and debated, however, the facts of weightlifting are unmistakable.

Positive aspects of full squat:

- The lower the squat (important! Not making use of the final range of joint movement) the longer the stimulus for the muscles.
- The more unfavourable the angles in the knee and hip joints (more concentric strength has to be applied) the lower the load (less strain symptoms).
- The pressure of the kneecap on the bones is lower than with half squat.

Positive aspects of half squat:

- Higher event-specific effect (squats only as deep as I need them in my event).
- Much higher loads can be moved due to the favourable angles in the knee and hip joints, which has a positive effect on the recruitment of muscle fibres.
- Simple execution of movement, which means that the demands are lower in respect to flexibility and coordination.

Ultimately, arguments for both movements have to be assessed individually. Nevertheless, the author is aware of a sensible variation in terms of training methods, which has already been put into practice successfully in other sports. In the build-up phase (prior to the competition season) one makes use of the full squat and then changes the movement in the competition season to the half squat.

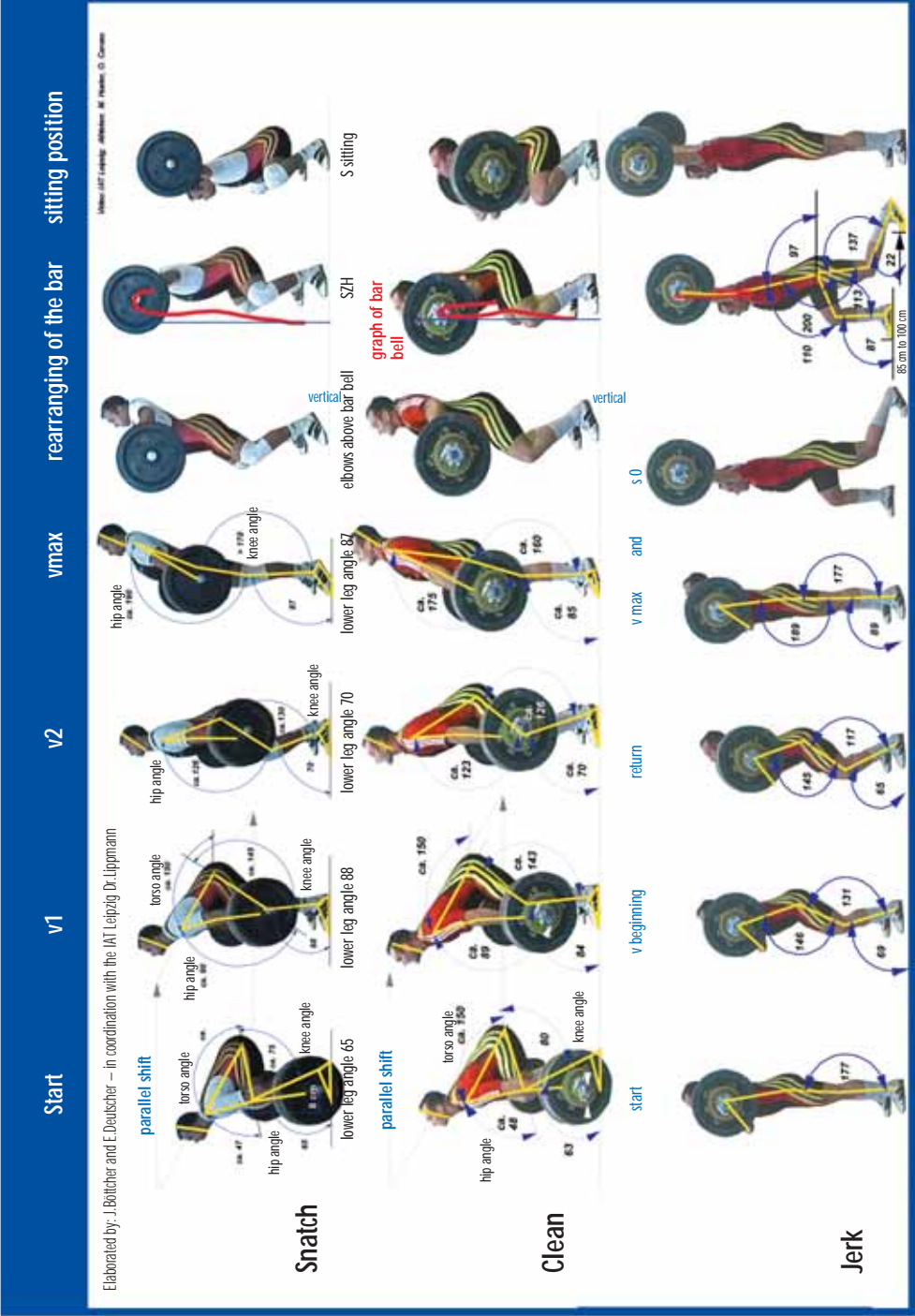


Figure 1: Models of technique for weightlifting (Böttcher/Deutscher 2004)

Other special applications are not known, but often result from an insufficient technical development of the athlete. Here is another concrete example in this context:

In the snatch, the athlete does not touch the thigh with the barbell in the acceleration phase. After detection, this cardinal error is put into perspective and justified by saying "we don't need it" or "after all, we are not weight lifters". But this is exactly the point. If training exercises are not carried out according to the technique model, then the desired effect in respect to developing speed strength in the extensor chain (hip and knee angle) is distinctly reduced.

The suggested solution would be to work with weightlifting coaches throughout basic training in order to learn lifting techniques with the barbell.

Models of technique

In its stereotype execution of movement, weightlifting can be described and analysed biomechanically like no other sport. For this reason there is secured knowledge of all the motions, which are summarised in a model of technique (Böttcher/Deutscher 2004).

Methods and didactics

The methodological approach for learning sport technique is based on taking the whole movement apart into phases of movement (cf. model of technique). The phases are then put together again, forming complete movements, which are recognisable as the competition exercises. In the following, we can see methodological descriptions of training exercises, including cardinal errors and the reasons for them. The sequence described is a proven didactic approach for these basic techniques.

The complex of the Snatch and Clean

Lifting exercises with broad and narrow grips are offered in this important training

complex. In a preliminary stage, the barbell is pulled up to the chest with a broad grip (pull to chest (broad grip)). In a perfected, demanding version, one pull is used to bring the barbell above the head into the stretched-up-into-the-air position. With a narrow grip, the barbell is pulled up to the navel and as in a standard clean, moved to and rested upon the shoulders.

This variation can be carried out more easily than training exercises with a broad grip, because the path the barbell has to travel is shorter. Hence, the exercise is less demanding for the athlete in terms of balance and movement co-ordination. All exercises in this complex have a decisive importance due to their high level of speed strength respective to the concentric demand. This is based on involvement of the large muscles (extension chain, change in hip and knee angle) and co-ordinative demands in dynamic and static muscle contraction.

PULL TO CHEST (BROAD GRIP)

Execution of the exercise:

This exercise is the most elementary exercise for the development of specific speed strength abilities for the acceleration phase in the snatch. The high structural proximity is important in the execution of this exercise because of the correspondence to the snatch (comparable knee and hip joints angles).

In this exercise, only the pulling movement is carried out, according to the movement of the snatch into standing position, without the following repositioning of the bar. The target of this exercise is to pull the barbell up to chest-height with maximum acceleration. The speed strength component in the second pulling phase is of special importance so that all muscle fibres of the extension muscles in the knee and hip joints are activated. Moving the barbell close to the body is equally important.

Initial Position

from the side

- back levelled (pre-tension in the back muscles)
- upper body leaning forward (shoulders in front of the barbell)
- toes below the barbell



from the front

- arms straight
- view straight ahead (head lifted up)
- feet shoulder-width apart

Final Position

from the side

- angle of hip slightly overstretched
- standing on the toes
- arms bent (elbows are pointing upwards)



from the front

- body fully upright
- neck muscles fully contracted
- barbell close to the body

Methods and didactics:

The quality of the movement is measured by the speed in the second pull – not by the height the barbell is lifted to. The transitions between the first and second pulling phases have to be increasingly fluent with a rising accuracy of the movement and in the end should not be visible. The closer the barbell is pulled along the body the more efficient and faster the pulling movement.

Areas of application in athletics:

As a preliminary stage of the snatch, this training exercise has lower co-ordinative demands than the competition exercise. Hence, the pull to chest (broad grip) belongs to the most important exercises for speed strength development of the complete extensor chain (knee and hip) and is therefore applied in all events.

Note: This training exercise can be practised both as a preliminary exercise for snatch into standing position and as an individual training exercise.

Remarks for correction:

Fault: Barbell is lifted away from the body

Correction: Correct the position of feet; shoulder too far in front of the barbell

Fault: Back is not straight at high intensities

Correction: Choose low loads to ensure a correct execution of the exercise

Fault: Premature bending of the arms

Correction: Bend arms only after complete extension of the body

Fault: Body is not fully extended in the position of highest barbell speed (V_{max})

Correction: Acceleration is finished when

- a) feet are on the toes
- b) hip is slightly overstretched
- c) the trapezius muscle is fully contracted

SNATCH

Execution of exercise:

The snatch corresponds with the original competition lift of the two-lift Olympic competition. In the phases of lift-off (first pull), the acceleration phase (second pull), repositioning of the bar and fixing it, and standing up, the barbell is being pulled into the stretched-up-into-the-air position (without pauses) in a one-phase exercise

With a broad grip, the barbell is pulled from the ground into the stretched-up-into-the-air position in one single pull. The pulling movement is the same as the movement for the pull up to the chest. After maximum acceleration, the athlete starts with an active turning back movement (Repositioning of the bar), by losing ground contact. Lowering the body below the barbell is achieved by an active arm pull and a quick bending of the legs. This is supported by a quick movement of the elbows towards the front.

The barbell is now being actively slowed down and the athlete is now getting up from a deep squatting position into standing position.

Methods and didactics:

In the first pulling phase, only the knee and hip angles are opened parallel to each other. Shoulders remain in front of barbell until the end of the first pulling phase. Slight touching of the thighs (brushing) at the beginning of the second pull (in the beginner's stage, transitions between first and second pulling phase show a slight pause for a better idea of the movement). Bending of the arms is only carried out after the acceleration of the barbell. Quick transition from the start of bending the arms to full extension in the end position.

Areas of application in athletics:

The snatch is by far the most co-ordinatively demanding weightlifting exercise and hence requires a time-consuming learning process. For this reason, this exercise is only applied in the events that show a high correspondence to the execution of the movement. The preferred events are hammer throw, discus throw, pole vault, high jump, javelin throw, shot put.

Initial Position

from the side

- back levelled (pre-tension in the back muscles)
- upper body leaning forward (shoulders in front of the barbell)
- toes below the barbell



from the front

- arms extended
- view straight ahead (head lifted up)
- feet hip-width apart

Final Position

from the side

- back straight (muscles flexed)
- arms behind the head
- legs extended

from the front

- arms extended
- feet shoulder-width apart
- upper body upright



The phases of movement:

Initial Position

Fault: Too broad or too narrow foot position

Correction: Roughly hip-width, toes pointing outwards at roughly 7°

Fault: Too close or too far away from barbell

Correction: Tip of big toe in front of barbell

Fault: Width of grip too narrow, too broad, open grip

Correction: General rule to determine width of grip: left shoulder to right extended arm, end of fist, tight grip (thumb wedged under fingers)

Fault: Rolling of the barbell

Correction: Barbell is not moved anymore until lift-off

Fault: Upper body forward or leaning backward with respect to the barbell

Correction: Optimal: shoulders roughly 7-8cm in front of barbell

Fault: Buttocks too high, too low

Correction: Knee angle roughly 75° (Bötcher OSP Berlin)

Possible means of correction:

- Repeatedly moving into initial position and flexing the muscles
- Improving flexibility in hip, ankle, chest and shoulder areas

Lift-off, first pull

(including passing the knees)

Fault: Sudden, jerky start of pulling the barbell

Correction: Smooth lift-off of the barbell with dynamic starting movement

Fault: Bent arms

Correction: Extended arms, elbows slightly towards the outside

Fault: Pronounced lifting of the buttocks

Correction: Steady and parallel upward movement of shoulder and buttocks

Fault: Lifting of the heels

Correction: Lift from the whole of the foot, barbell moves towards the body

Fault: Back loses tension (hunchback)

Correction: Back remains straight

Fault: Barbell moves towards the front

Correction: Pressure on the heels, enough distance to the barbell, pull towards the body, shoulder in front of barbell, parallel upward movement of back

Possible means of correction:

- Strengthening exercises for the back muscles (general strength exercises)

- Pulling exercise up to first pull and returning eccentrically into initial position, exercises are carried out with slow speed, centre of system above the middle of the foot

Acceleration phase, second pull

Fault: Premature bending of the arms

Correction: Arms remain straight until the end of the extension

Fault: Free pull

Correction: Contact between thighs and barbell

Fault: Premature extension of hip or legs toes

Correction: Simultaneous extension of legs and hips, subsequently of toes

Fault: No final extension of hips, legs, toes and shoulders

Correction: Optimal final extension, head remains in vertical position

Fault: Flinging of the barbell

Correction: Pulling close to the body, not too strong thigh contact, barbell remains behind the shoulder

Fault: Overstretching (hip, head flinging)

Correction: Head remains in vertical position, no backward lean, barbell remains behind vertical, shoulders in front of barbell and pulling close to body

Fault: No lifting of the feet from the ground

Correction: In the final extension, immediate and active lifting of feet from the ground

Possible means of correction:

- Slower execution. The stress lies on the simultaneous extension of legs and hip.

Repositioning of the bar

Fault: Remaining up on the toes for too long after final extension and no lifting from the ground

Correction: Immediate lifting from the ground after final extension, flat spreading of feet

Fault: Lack of final work

Correction: Active continuation of pulling with the arms after lift-off of feet until locking of arms in squatting position

Fault: Too narrow, too broad a jump, toes too far towards the outside

Correction: Slightly broader than in initial position, toe tips c. 3-5cm towards outside

Fault: Jump to the front

Correction: Moving barbell behind the vertical, active pull of barbell towards the rear (c.10cm)

Fault: Uneven, too high a jump

Correction: Parallel, complete lift-off from the ground

Fault: Too high a catch of the barbell (standing position then squatting)

Correction: Quicker repositioning (higher load possible) into lower squatting position

Fixing and standing up

Fault: Too late or too weak breaking movement

Correction: Finishing repositioning prior to hunchback in squatting position (slumping down), breaking movement, muscular breaking (not making use of the final range of joint movement)

Fault: Twisting of body

Correction: Parallel to foot position

Fault: Pronounced forward lean of upper body

Correction: Upright, only slightly to the front

Fault: Walking while standing up

Correction: Vertical, controlled standing up

Possible means of correction:

- Jumps onto a box or over hurdles from standing position
- Strengthening of imparted muscles (training exercises squat, front and back)
- Neck pressing in snatch grip in squatting position
- Improvement of flexibility in ankle, hip and shoulder areas

PULL TO NAVEL (NARROW GRIP)

Execution of exercise:

This exercise should be practised with sensitive load arrangement. Be cautious, it is possible to overtrain here.

In this exercise, analogous to the movement of the clean, there is the pulling movement carried out exclusively without the subsequent repositioning of the barbell. The target of this exercise is to pull the barbell until it is slightly above the navel at maximum acceleration. The speed strength component in the second pulling phase is of special importance so that all muscle fibres of the extension muscles in the knee and hip joints are activated. Moving the barbell close to the body is equally important.

Methods and didactics:

The quality of the movement is measured by the speed of the second pull – not by the height the barbell is lifted up to. The upper body and legs must be extended in the final position. The transitions between first and second pulling phases have to be increasingly fluent with increasing accuracy of the movement and in the end they should not be visible. The closer the barbell is being pulled along the body the more efficient and faster is the pulling movement.

Areas of application in athletics:

As a preliminary stage of the clean, this training exercise has lower co-ordination demands than the competition lift clean. The pull to the navel (narrow grip) belongs, just like the pull to chest (broad grip), to the exercises for the development of speed strength in the complete extension chain (knee and hip). Due to the narrow grip, the low pulling height and the application of high intensities (c.20 – 40 kg heavier than the pull to chest (broad grip)), the speed strength component is less pronounced, but the maximum strength component has to be rated even higher. Hence, the application is exclusively to throwing events like the hammer throw, shot put and discus throw.

Initial Position

from the side

- back levelled (pre-tension in the back muscles)
- upper body leaning forward (shoulders in front of the barbell)
- toes below the barbell



from the front

- arms extended
- view straight ahead (head lifted up)
- feet hip-width apart

Final Position

from the side

- hip angle slightly overstretched
- on the toes
- arms bent (elbows are pointing upwards)



from the front

- body fully upright
- neck muscles fully contracted
- barbell close to body

Remarks for correction:

Fault: The body cannot be fully extended in the final phase

Correction: Intensities are too high

Fault: Barbell leaves the ground with bent arms

Correction: Arms extended, precise lift-off, like in the exercise clean

Fault: Over-pronounced thigh action (to gain height)

Correction: High structural closeness to clean

CLEAN**Execution of exercise:**

The clean is, like the snatch, part of the two-lift Olympic competition. Generally, the pulling phase in the clean can be regarded as analogous to the technique of the snatch. Consequently, the faults and corrections apply here, as well.

With a narrow grip the barbell is brought from the ground onto the shoulders in one single pull. The pulling movement is divided into the first pulling phase, a guided lift up to the middle of the thighs and a subsequent second pull. A maximum acceleration of the barbell in the second pulling phase after the thighs is of special importance. Due to the lift of the barbell it is rested on the shoulders/collarbones. In the final phase the elbows are pointing to the front and upwards and the athlete breaks the load of the barbell in a deep squatting position.

Initial Position

from the side

- back levelled
(pre-tension in the back muscles)
- upper body leaning forward
(shoulders in front of the barbell)
- toes below the barbell



from the front

- arms extended
- view straight ahead (head lifted up)
- feet hip-width apart

Final Position

from the side

- back straight (muscles flexed)
- legs extended
- elbows pointing forwards and upwards

from the front

- barbell rested upon the shoulders
- feet shoulder-width apart
- upper body upright



Methods and didactics:

In the first pulling phase, only the knee and hip angles are opened in parallel. Let the shoulders remain in front of the barbell until end of the first pull. Slight touching (brushing) of thighs and barbell at the beginning of second pull. Afterwards, there is an explosive extension of the legs and upper body in the second pulling phase (with beginners there is a slight pause between first and second pulling phase for a better idea of the movement). Bending of the arms is only carried out after the acceleration of the barbell. Quick transition from the start of bending the arms to the active turning of wrists with the aim of resting the bar on the shoulders/collarbones quickly.

Areas of application in athletics:

Unfortunately, the clean as a complex barbell exercise finds only rare applications in athletics. Due to the narrow grip, the low pulling height and the application of high intensities (c.20 – 40 kg heavier than in the snatch), the speed strength component is less pronounced, but the maximum strength component has to be rated even higher. Hence, the application only includes the throwing events like hammer throw, shot put and discus throw. In athletics, there should be increased application of this training exercise over time. In some sports (ball sports, martial arts), this training exercise is increasingly applied due to its low demands in abilities and skills.

The phases of movement:

Initial Position

Fault: Too wide or too narrow foot position

Correction: Roughly hipwidth, toes are pointing outwards at roughly 7°

Fault: Too close or too far away from barbell

Correction: Barbell above first joint of big toe

Fault: Width of grip too narrow, too broad, open grip

Correction: General rule: grip slightly wider than shoulder-width, tight grip

Fault: Rolling of the barbell

Correction: Barbell is not moved until lift-off

Fault: Upper body forward or backward lean in respect to the barbell

Correction: Shoulders roughly 3-5 cm in front of barbell

Fault: Buttocks too high, too low

Correction: Knee angle roughly 85°

Fault: Rounded back

Correction: Tension in upper body, push chest forward

Possible means of correction:

- Repeatedly moving into initial position and flexing of muscles

- Improving flexibility within hip, ankle, chest and shoulder areas

Fault: Twisting of body

Correction: Parallel to foot position

Lift-off, first pull (including passing the knees)

Fault: Sudden, jerky start of pulling the barbell

Correction: Smooth lift-off of the barbell with dynamic starting movement

Fault: Elbows are pointing downwards

Correction: Keep elbows horizontal

Fault: Pronounced forward lean of upper body

Correction: Upright, only slightly to the front

Fault: Bent arms

Correction: Extended arms, elbows slightly towards the outside

Fault: Walking while standing up

Correction: Vertical, controlled standing up

Fault: Pronounced lifting of the buttocks

Correction: Steady and parallel upward movement of shoulder and buttocks

Fault: Knees too high (angle of knee too great)

Correction: Feet sufficiently far apart, deep squatting position with knees to the front, slightly towards the outside

Fault: Lifting of the heels

Correction: Lift from the whole of the foot, barbell moves towards the body

Possible means of correction:

- Jumps onto a box or over hurdles from standing position
- Strengthening of imparted muscles (training exercises squat front and back)
- Improvement of flexibility in the ankle, hip, shoulder areas and the elbows)

Fault: Back loses tension (hunchback)

Correction: Back remains straight

Fault: Barbell moves towards the front

Correction: Pressure on the heels, enough distance to the barbell, pull towards the body

As addition a few peculiarities of the clean at resting the barbell upon the shoulders shall be dealt with.

Possible means of correction:

- Strengthening exercises for the back muscles (general strength exercises)
- Pulling exercise up to the first pull and returning eccentrically to the initial position, these exercises are carried out at slow speed with the centre of system above the middle of the foot.

The initial position of the feet should be slightly closer to the barbell than in the snatch.

Reason:

Due to the high load of the barbell in the jerk, the centre of mass of the barbell has a higher importance in respect to the centre of mass of the body. This deviation from the snatch is necessary as the centre of the system (barbell + body) has to be above the metatarsus (middle of the foot) for an optimal pulling position.

Second pull and Repositioning of the bar

These faults and descriptions of corrections are the same as in the snatch.

Sitting in squatting position

Fault: Too late or too weak breaking movement

Correction: Finishing repositioning prior to hunchback in squatting position (slumping down), breaking movement, muscular breaking (not making use of the final range of joint movement)

Important:

Due to the criteria of the initial position, it is of special importance to keep the body position firm while pulling. Compensatory movements are hardly possible because of the higher load of the barbell and the shorter pulling phase.

The complex of the squats

The field of squatting is an additional training complex, which is being learned and trained in its entirety in the variations of front squats and back squats. This complex is not very demanding from a co-ordination perspective and is therefore positioned at the end of a training unit.

BACK SQUATS

Execution of exercise:

This exercise exclusively serves the development of maximum strength in the muscles of the legs and buttocks. It is not structurally close to the clean nor does its efficiency correspond to the front squat. The result is that this exercise is not used very

frequently in the development of performance. The advantage of this exercise is the application of very high loads to develop maximum strength. Unfortunately, effective intensities cannot be realised due to evasive movements in the execution of the exercise.

From the rack, the barbell is rested on the neck. With tension in the back and an upright upper body the athlete moves slowly, vertically and on the whole of the foot into the deep squatting position. He/she constantly maintains tension in the whole body. In the deep squatting position, the barbell is slowed down by muscle work and not by making use of the full range of the joint. Without a pause and eyes fixed straight ahead, the athlete moves dynamically from the squatting position into extended standing position.

Initial Position

from the side

- tension in the back
- head slightly leaning towards the neck



from the front

- view straight ahead
- feet shoulder-width apart
- toes slightly pointing towards the outside

Final Position

from the side

- sitting position on the whole of the foot
- tension in the back
- view straight ahead



from the front

- grip barbell symmetrically
- upper body upright
- knees pointing towards the outside

Methods and didactics:

Steady, fluent movement under constant muscle tension of the torso stabilisers (abdominals, back muscles). Knees remain pointing outwards (do not press together) throughout the whole movement. Dynamic rising movement from the squatting position. The depth of the squatting position depends on the flexibility of the ankle. Take up only those squatting positions that allow for a load distribution on the whole foot.

Areas of application in athletics:

This classic form of squatting is applied in all events of athletics and it belongs unequivocally to the most important exercises for the development of maximum strength in the muscles of the legs and the buttocks.

Remarks for correction:

Fault: Athlete does not move down deep enough

Correction: Deep, firm squatting position

Fault: Athlete makes use of the reversing movement (slumping down)

Correction: Maintain tension from the start till final position

Fault: Speed of movement too dynamic

Correction: This exercise is always carried out very slowly

Fault: Athlete evades to the back with his buttocks

Correction: This exercise is always carried out parallel, close to the vertical

Possibilities of application:

- Main exercise for the development of maximum strength in the legs, should be applied more in the preparation phase.
- Due to regeneration purposes, sets should not fall short of 3 repetitions.

FRONT SQUATS

Execution of exercise:

This is the main exercise for the development of leg strength. The training phase is dominated by this exercise. This means that the exercise is carried out at slow speed in the base and build-up phases.

In the development of performance, the squatting movement can be practised slightly quicker. Furthermore, one should pay attention to the fact that the hands grip the barbell firmly.

From the rack the barbell is rested on the shoulders / in the front. With tension in the back and an upright upper body, elbows pointing upwards and to the front, the athlete moves slowly, vertically and on the whole of the foot into the deep squatting position. He/she constantly maintains tension in the whole body. In the deep squatting position the barbell is slowed down by muscle work

and not by making use of the full range of the joint. Without a pause and with eyes fixed ahead, the athlete dynamically moves from the squatting position into an extended standing position.

Remarks for correction

Fault: Lowering movement too quick

Correction: Slow downwards movement

Fault: Elbows are pointing downwards in the deep squatting position

Correction: Consciously push elbows upwards

Possibilities of application:

- This training exercise must be carried out at least twice a week. An exchange (shift of emphasis) with back squat is possible in the base and build-up phases.

Initial Position

from the side

- tension in the back
- head slightly leaning towards the neck



from the front

- view straight ahead
- elbows pointing upwards
- feet shoulder-width apart
- toes pointing slightly outwards

Final Position

from the side

- head slightly leaning towards the neck
- elbows pointing to the front



from the front

- head up in the deep squatting position
- elbows pointing upwards

Methods and didactics:

The elbows remain in the initial position throughout the whole movement.

Areas of application in athletics:

This classic form of squatting is applied in all events of athletics and it belongs unequivocally to the most important exercises for the development of maximum strength in the muscles of the legs and the buttocks.

In contrast to the back squat, squatting with the bar in the front (reduced intensities, c. 30 – 40 kg lighter at the same effect) is especially suitable for women or juniors, as the stress on the supporting and connective tissue is lower due to lower loads. Another positive effect of front squats is the demand for a correct execution of the movement to accomplish the load. This means that if this training exercise is carried out with poor technique (hunchback) the barbell usually slides off the shoulders in the movement and falls down to the ground.

*Part II of the article will appear in
NSA issue 2/2005*