

ATHLETES rely upon strength to help them achieve greater skill leading to an increase in their performance capabilities.

Though an important component in achieving success, strength is not the most essential factor. In track and field athletics, ultimate performance in the event is the focal point, resulting from a balance in training methods.

To understand how strength applies to modern training theory, it must be understood that there are different forms of strength requirements for different events and also that these requirements also differ within an event at different times of the year. These key strength training elements are contained within the athletes preparation plan.

This week National Coach Andy Vince explains how the use of weights can help to build strength as part of a training regime during the winter conditioning programme

The general training theories which have been demonstrated in previous issues of this series precluding to OVERLOAD, ADAPTATION, GRADUALITY and SPECIFICITY, all apply very much to strength training using resistance.

There are many forms of strength training, the most common and well known being 'Free Weight Training'. This involves the use of barbells and dumbbells and is the most effective of existing methods in translating athletic movements into specific transfer of strength for a particular event.

The type of strength related training can be broken down into these areas.

1. Gross Strength Training
THE gross strength is typified by lifting with resistances that relate to maximum effort or sub-maximal resistance involving five reps or less.

The muscles of the body respond to heavy overload training by inhibiting significant Hypertrophy (growth), thus increases in the muscle contractile ability (strength).

The changes in the body brought about by training will enable the athlete to be bet-

ter equipped, both in their performance and resilience to injuries.

2. Strength Endurance Training

THE value of strength endurance training is that it will cause a marked alteration in the basal system but second and most importantly produce an efficient heart which allows the athlete to get through gruelling workouts with a minimum of trauma.

3. Elastic Strength Training

THE objective of this form of training is to train the muscles in the body to react quickly and exert force (power) in a short period of time. The methods used to accomplish these vary from plyometric training and incorporate depth jumping, medicine balls as well as barbells.

THE STRENGTH

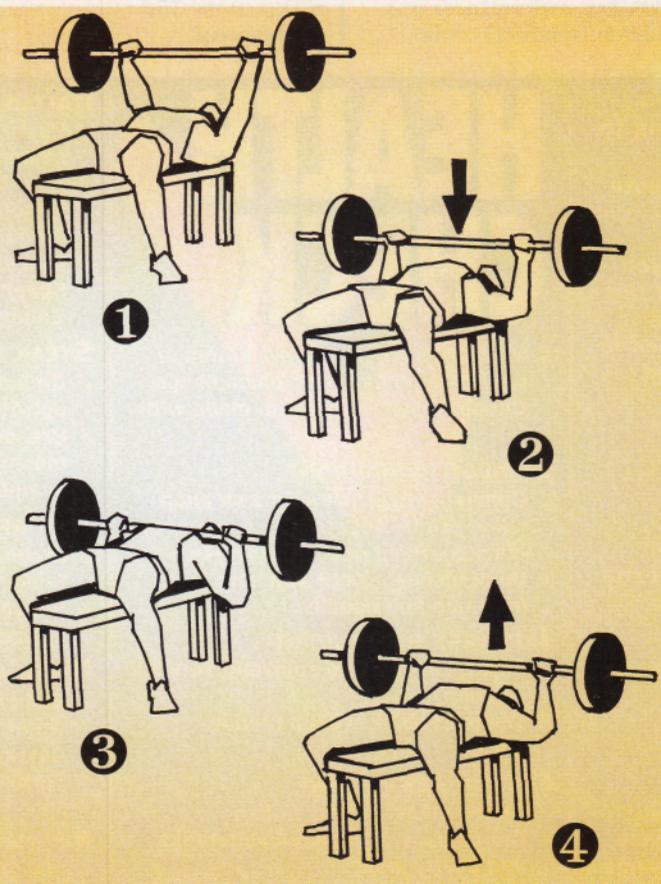
BENCH PRESS

Fig 1: THE athlete should have both feet firmly placed on the floor, toes slightly pointing out. The head should be supported on the bench. A normal grip would be just outside shoulder width apart.

Fig 2/3/4: THE bar must be lowered down with control, and as the bar touches the chest, the athlete exhibits an explosive thrust upward. (The bar would touch the chest slightly above the sternum). The exercise must be a full range movement finishing in the original start position.

SAFETY

THIS exercise must always be attempted with at least one person helping (spotting). The spotter would stand behind the athletes' head and shoulders and assist in the instance of failure either through fatigue (many reps) or failed max attempt (experienced senior athletes only).



POWER CLEAN

Fig 1: GRASP the bar with a shoulder width grip. Bar positioned over the base of the toes, shins touching the bar. Back flat – shoulders over bar – arms straight – look ahead.

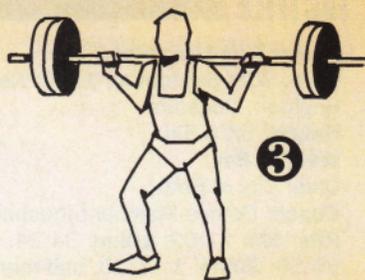
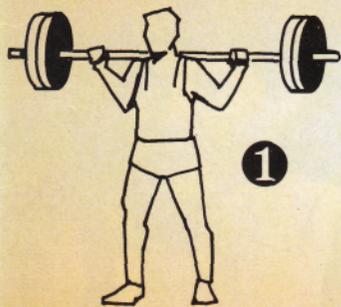
Fig 2: INITIAL lift is slightly backwards and upwards – the movements is predominantly legs – keep the back flat and shoulders over the bar – still straight.

Fig 3: PULL straight and high angle the hips to the bar – keep close to the bar. Don't pull back – extend ankles, knees and hips.

Fig 4: RECEIVE the bar with a dip at the knees. Push the elbow forward and the bar is caught on the shoulders. The bar should be returned to the floor in two movements. First to the thighs, then to the floor (initial starting position).

SAFETY

THE exercise must be taught by a coach with good lifting knowledge. The vulnerable areas for injury are the lower



SQUAT

Fig 1: THE bar should be placed high on the back nesting in the fleshy trapezius muscle. The feet should be placed shoulder width apart; the body erect and rigid. The eyes should focus slightly upwards.

Fig 2: THE bar should be lowered in a controlled manner. The hips should not fall backwards, but the athlete should image they are sitting in a chair. The torso must remain rigid, back straight and chest high, chin up. The descent should stop as the thighs are parallel to the ground.

Fig 3: FROM the bottom position drive the hips forward ensuring that:
a) the head is forced upwards
b) the back is kept flat and chest high
c) the hips continue to be forced forward and not allowed to drop back
d) the knees are kept before the next repetition is attempted.

SAFETY

THIS exercise should be performed on flat, level, floors. The floor should be strong and must be kept dry at all times. The bar must be placed on strong squat racks firmly anchored to the ground. The weights on the bar must have locking collars on the ends to secure weights.

(chest muscles).

The discus thrower might adopt the exercise employing a wider grip which would relate more to the delivery of the discus at release. The hips can be allowed to come off the bench as that would help the athlete accommodate to a power position in throws, or take off position in jumps.

Athletes of all ages and all events need both basic and superior strength requirements in key areas of the body.

The areas can be identified as:

- a)** Lower Back/Thighs
- b)** Chest/Shoulders and upper arms

These key areas can be trained for effectively by

using two simple but effective exercises.

POWER SQUAT

THIS is the single most important exercise for athletes across all disciplines. There are movements required for the athlete to learn co-ordination skills and have good mobility/flexibility in joints and muscles.

The benefits are dependent on the repetitions attempted, but have a specific effect on both fitness (many reps) and specific power gains (few reps). See table at the bottom of the page.

THE SQUAT

THIS is the foundation on which all strength based exercises revolve.

The thighs/buttocks generate the POWER from which sprinters generate forward drive, throwers express ground reaction forces which transfer through the implement, and runners express continued cadence over medium, long and ultra distances. Squatting also contributes to isometric strength (static strength) in the lower back, particularly in the erector spine muscles which absorb impact from the ground through the legs.

BENCH PRESS

THIS is by far the most popular lift in the gymnasium and the best single exercise for increasing upper body strength. The exercise must be adapted, depending on the event ie javelin throwers and shot putters would adopt the exercise by employing a shoulder width grip to get maximum benefit from the triceps, and full range of motion from the pectoral

SUMMARY OF METHODS

A summary of the methods of weight training for various objectives (using free weights)

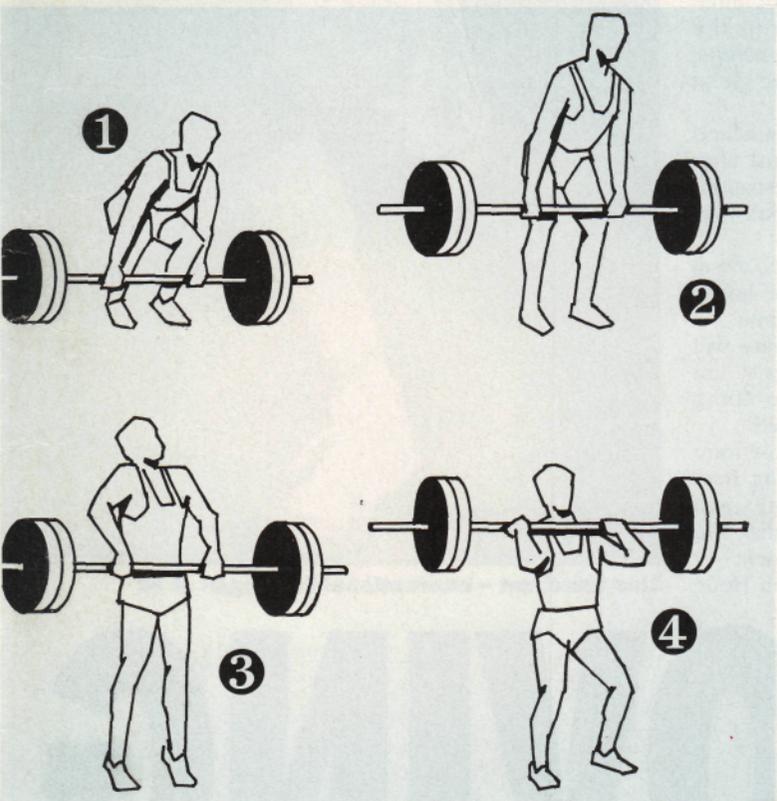
	Variable	Power	Strength	Local muscular endurance
Sets	4-6	4-6	4-6	Maximum
Reps	3-8	3-8	3-8	25-40

Method: Explosive, compensatory acceleration with moderate cadence and a slow, continuous cadence

Rest intervals: Short pause with relaxation between reps, and 2-6 minutes between sets.

Short pause with relaxation between reps, and 2-6 minutes between sets. Allow heart rate to return to manageable level between sets.

H O F I T



back. A weight lifting belt is also recommended. The skill should be perfected before

the athlete attempts lifts which are near maxim effort below five reps.