The art of SPOTTING

WHILE MANY GYM INSTRUCTORS AND PERSONAL TRAINERS take the time to teach their clients how to lift weights correctly, few provide instruction on how to 'spot'. In fact many gym instructors and personal trainers are not taught how to spot correctly.

Before addressing this need, it is important that the purposes behind spotting are understood. Spotting involves assisting the person who is lifting a resistance by:

1. providing safety in case of muscle/technical failure; and/or
2. assisting them with working towards a higher intensity by helping them past their 'limit point' (aka 'weakest point' or 'sticking point') in their exercise movement.

Techniques for spotting

Optimal spotting technique requires consideration of three key factors:

1. the volume of muscles the spotter will use
2. the lever lengths (lever arm) of the spotter's lifting technique and their centre of gravity (COG)
3. potential failure points in the lifter's exercise.

Volume of muscles used

Consider how much weight you can lift in a biceps curl versus an upright row versus a squat. The answer is typically more for the upright row than the biceps curl and more for the squat than the upright row. One of the reasons behind this lifting capacity gradient is the volume of muscles employed in the lift. The more muscles involved, the greater the lifting potential.

Lever arms and Centre of Gravity (COG)

A key aim for spotting effectively (and safely) is to keep the lever arm as short as possible and to keep the load as close as possible to the COG. Again, consider the difference between trying to biceps curl a weight versus upright rowing the weight. With an upright row the load arm is kept short and the weight is kept closer to the COG. However, with the biceps curl, the lever arm (the length of the forearm) increases through the arc of the biceps curl making the lift less effective. Furthermore, as the resistance moves away from the body, the COG is shifted forward, outside of the base of support, and the natural tendency is to tilt forward from the hips in order to return the COG to within the base of support.

Potential failure points

Before spotting for the exercise, the spotter must consider which joints are involved in the exercise and which muscles move these joints. A bench press, for example, has movements primarily at the scapulothoracic, shoulder and

elbow joints. For this movement the primary potential failure points are the shoulder and the elbow.

The spotter must consider the nature of the lifter's exercise; select a method of spotting that employs a high volume of muscles, keeping the lever arm short and the resistance close to the body while protecting the lifter through potential failure points.

Spotting for dumbbells versus barbells

There is a subtle but important difference between dumbbell and barbell training when it comes to potential failure points. When training with a barbell the dependent nature of the bar provides a measure of joint support through some potential failure points. For example, if the right elbow begins to collapse during a barbell bench press, an increase in left shoulder horizontal shoulder flexion will 'prop up' the collapsing elbow by creating an elbow extension movement. With this in mind, an exercise that uses a barbell can be spotted at the elbows, using moderate weight and the skill of the lifter (see photo 1). It is a different case with dumbbells, however; being independent, if the right elbow begins to collapse, only the strength of the triceps brachii muscle can support the elbow. Considering that the weight lifted in a dumbbell bench press is often more than a person can perform a single arm elbow extension with, the elbow extension movement will be more at risk as a potential failure point (see photo 2). With this in mind, spotting at wrist will allow the spotter to control the weight should the elbow collapse (see photo 3). Furthermore, if the weight cannot be lifted, the spotter can guide the weight to the side and assist in a controlled drop.

Spotting a Squat and Lunge

With the paraspinal muscles unable to match the lifting power of the lower limbs, fatigue in the paraspinal muscles is of concern to the trainer. Paraspinal muscle fatigue can lead to an increase in forward spinal flexion, a position in which the integrity of the spine is compromised and the paraspinal muscles come under even greater load. Spotting techniques which hold the hips can assist the lifter to extend the knees and finish the squat, but provide inadequate support for the lower back (see photo 4).

Therefore, in order to effectively spot for a squat, a technique that allows the spotter to lift a heavy load while supporting the spine from increased forward flexion is required. This technique is best facilitated by the spotter conducting a squat in time with the lifter (with feet placed wider) and arms under the lifter's upper arms and ready to support the spine by firmly supporting the upper body, with arms across the upper chest (see photo 5). The same technique can be used for a lunge, with spotter's feet astride the rear leg of the lifter (see photo 6).

Spotting a Bench Press

When spotting a barbell bench press, a tendency towards familiarity and a lazy approach to spotting is frequently evident, with an under-grasp biceps curl often being used. As alluded to previously, the biceps curl is not a preferred spotting method as it is often weaker than the amount of weight that can be lifted in a bench press (always prepare for worst case scenarios where the spotter will have to control the entire load), the lever arm is relatively long, and the centre of gravity is moved forward resulting in a tendency for the spotter to bend at the hips and load their lower back (see photo 7). With this in mind, an upright row action which can include a squat to increase lifting force is more appropriate as a greater volume of muscle is used, the lever arm is short and the load is kept close to the body (see photo 8).


5

Spotting a Push Up

When spotting a push up for increased intensity, two points can be used. For those with a very strong core and hip stability, the spotter can stand astride the lifter with a towel wrapped under the upper body (approximately nipple line). However, many clients find this position uncomfortable and restrictive. A preferable option is for the spotter to again stand astride the lifter, but with the towel placed beneath the lifter's hips. This position can assist in controlling pelvis position and


6


7


8


9

unloading the body by reducing the percentage of body weight the lifter must move (see photo 9).

More than one spotter

If the load being lifted on a barbell is heavier than a single spotter can safely manage, more than one spotter should be used. Ideally, three spotters will be used; one at each end of the bar and one in the centre controlling the spotters either end and equalising the bar. If only two spotters are available, one spotter should nominate to take the lead and coordinate the spotting effort. It is very important to establish the expectations of the spotters prior to the lift in order to prevent injury to both lifter and spotters.

TIPS FOR SAFE SPOTTING

- Do not spot by holding plates or wires
- Let the lifter know how you intend to spot (especially for the Squat and Lunge)
- Discuss what the lifter requires (assistance moving the load into position; assistance for the additional reps; attempted rep range etc)
- Be prepared as soon as the weight becomes 'live' (moved into position), and until the resistance is returned to the rack/ground
- Your sole attention must be on the lifter for the duration
- Communicate with the lifter throughout the set.

Rob Orr, MPhty BFET ADFPTI

Serving with the Australian Army, Rob is a qualified Defence Force physical training instructor and physiotherapist. Possessing a unique military and civilian conditioning background, he specialises in merging scientific theory with instructional art. With publications and training manuals spanning multiple fields, Rob presents, instructs and assesses various conditioning programs nationally.