



Resistance Training Techniques and Methods

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Introduction

In weightlifting and training, there are many ways to progress training. The following slides highlight some of the main techniques and methods

Isolation – Compound – Functional

Isolation exercises target an individual muscle (eg bicep curl). They are useful in developing muscle endurance or hypertrophy, but not so useful in developing strength.

Compound exercises use multiple joints and muscle groups in one exercise (eg deadlift). These exercises are great for developing strength and power as they carry a high 'neural load' ie, intra and inter muscle neurological demands are greatest

Functional exercises can be sports specific and replicate movements that occur during sport, helping to develop motor skills. Due to the high skill requirement of these exercises, it is hard to use them as strength or power builders, as maximal force production ability is limited

Typically, weight training programme would start with a combination of isolation and compound lifts and progress toward functional exercises

Unilateral – bilateral

Unilateral exercises use movement in one limb at any one time. This increases neurological requirements of a movement and makes them an excellent way to build motor skills including balance and control. They can also help to stabilise joints. They can be used at any point within a weight training programme provided that they challenge the athlete without injury risk

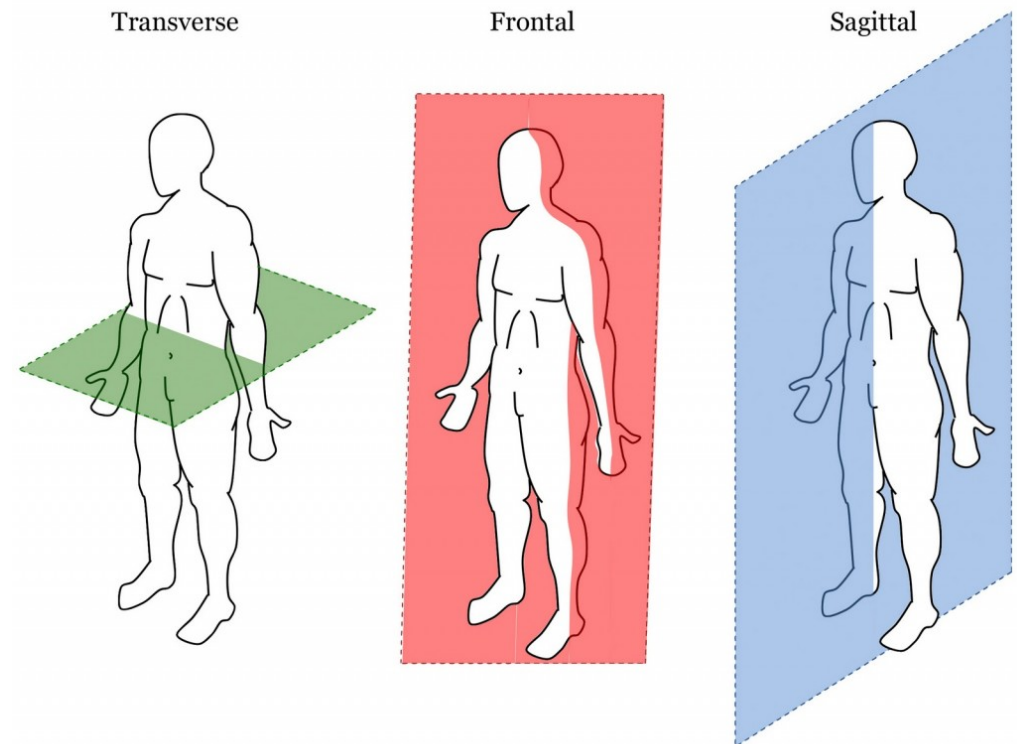
Bilateral exercises use movement in both limbs at the same time. These exercises are easier to perform than unilateral. For this reason, they are useful to build initial muscular fitness in an athlete, and also to build strength later on in a programme as heavier loads can be lifted

Uni-planar – bi-planar – tri-planar

The human body can move in up to 3 different planes – transverse, frontal and sagittal.

The simplest movements use 1 plane, with more complicated movements passing through 2 planes (bi-planar) or 3 planes (tri-planar).

It is generally accepted that sagittal movements are easiest, followed by frontal and then transverse movements being the most difficult



Stable - unstable

The stability requirements of an exercise drastically alter its difficulty. Standing on a stable, flat surface is typical of a gym environment. However, that is not true of a sporting environment.

Giving your client the ability to develop their balance motor skills is an important part of their programme. To do this successfully, thought must go in to replicating sporting conditions. Things to consider in programme progression might include:

- Contact points with ground – 1 or 2 feet
- Equipment – Utilisation of Swiss balls, BOSU, wobble boards etc
- Flooring – soft mats of different densities, sand pits, grass etc

Training methods

Since weight training was popularised by Charles Atlas throughout the 1930's, many training methods have been developed that purport to enhance training effects. Some of these are explained on the following slides



Step Pyramid Method

Popularised by Chuck Sipes in the 1950's

- Set 1&2 - 8 reps at 10 rm
- Set 3&4 - 6 reps at 8 rm
- Set 5&6 - 4 reps at 4 rm
- Set 6&7 - 2 reps at 2rm

Benefit – High total volume that does not overload the CNS. Good for hypertrophy

Downside – No specific training effect

Pyramid

Choose 1 exercise. Complete each exercise set, then rest for the desired amount of time. Lift with any tempo

Wide pyramid

- 15-12-10-8-6-4-2-1 reps

Benefit – Targets many muscle fibres therefore benefits endurance, hypertrophy and strength

Downside – no specific training effect and low volume per muscle fibre type

Narrow pyramid (any rep number can be used provided that the start resistance is within 15% of the finish resistance)

- 5-4-3-2-1 reps

Benefit – Targeted session aimed at a specific component of muscular fitness

Superset

Choose 2 exercises either for agonist-agonist or agonist-antagonist, completed back to back with no rest. Complete desired number of reps at any tempo. Eg:

- bicep curl – hammer curl 10/10 reps
- bicep curl – tricep extension 12/12 reps

Benefit – Agonist-agonist overloads muscle via volume. Agonist-antagonist condenses session

Downside – Agonist-agonist usually requires a high rep count

German Volume Training (GVT)

Originated in Germany in the 1970's. Popularised by Rolf Feser. Choose one exercise and find your 20RM (to failure). Then complete:

10 x 10 reps (60 secs rest) with that weight

Tempo for compound 4 secs eccentric : 2 secs concentric (4:2)

Tempo for isolation 3:2

Benefits – High volume of work on select motor units causes hypertrophy.
Great to develop skill due to high rep count

Downsides – Long time to complete. Deep Delayed Onset Muscle Soreness (DOMS)

5x5

Choose one compound exercise, then complete:

5 sets of 5 reps at a weight approximately 85% of your 1RM (3-5 mins rest)

Benefits – High neurological demand causes strength gains

Downsides – High neurological demand can cause neurological fatigue if programme not changed (approx 5 weeks)