

The Sports Injuries & Fitness Clinic

Injury Free Training

Produced by Paul A. McKenzie *Dip. FTST, Dip. FN, MFHT*

www.thesportsinjuries-fitnessclinic.co.uk

Email: paul@thesports-fitnessclinic.co.uk

Mobile: 07768 660077



MEMBER

Most gym equipment and exercises are good for developing muscular strength, power, endurance and for helping us “tone up”, however ALL exercises can be harmful if performed incorrectly. This seminar looks at some of the popular gym exercises and discusses the potential injuries and how to avoid them.

Reference has been made to major muscles involved and the injuries highlighted are common ones that result from poor technique rather than lifting excessive loads.

The exercises to be focused on are;

1. Bench Press
2. Lateral Pull Down / Chin Ups
3. Barbell Squats
4. Dead Lift
5. Single Arm Bent Over Row
6. Upright Row
7. Shoulder Press
8. Bench Dips
9. Skipping

Bench Press

Target area: Chest

Other muscles involved: anterior deltoid (front of shoulders) and triceps (back of upper arm)

Basic description of exercise:

Lie on your back on a padded bench, grip the bar slightly wider than shoulder width, lower the bar towards your chest while inhaling, then straighten your arms pushing the bar away while exhaling.

Potential injuries:

- Shoulder instability due to your shoulder blade being prevented from moving freely
- Damage to the shoulder joint capsule as a result of lowering the bar too far.

Alternative or technical improvement:

- If you have to do bench press, lower the bar to about a fist from the centre of your chest
- Dumbbell press on a stability ball
- Standing cable chest press
- Cable cross over
- Stability ball pec fly / chest press



Lateral Pull Down

Target area: Latissimus dorsi (broad back muscle)
Other muscles involved: Biceps (front of upper arm)

Basic description:

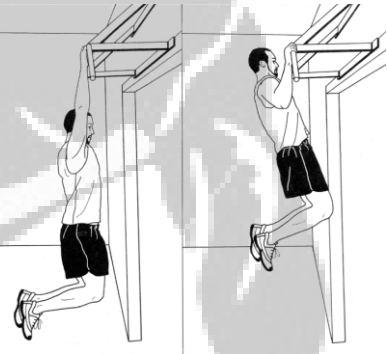
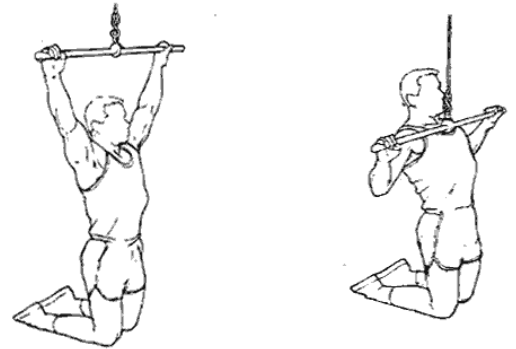
Sit on the lateral pull machine facing the weights, grip the handle bar slightly wider than shoulder width, lean backwards a little and pull the bar down towards the top of your chest.

Potential injuries:

- The common fault here is pulling the bar down to the back of the neck. This can cause shoulder instability due to the excessive external rotation that occurs in the shoulder joint to allow this movement to occur.
- Compression of the discs and facet joints in the neck can occur if the exerciser looks up or pulls the bar behind their neck during the exercise

Alternative or technical improvement:

- Pull the bar to the front, stopping at eye to nose level.
- Try pull ups (assisted?) performed similarly to the lat pull i.e. pull yourself towards the bar keeping it in front of you and stopping at eye to nose level.



Squats

Target area: Quadriceps (front of thighs), hamstrings (back of thighs) and gluteus maximus (bottom)
Other muscles involved: Lumbar erector spinae (lower back)

Basic description:

Position yourself under the bar so that it rests on the soft part of your shoulders, not your neck. Grasp the bar a comfortable width, position your feet approximately hip width then squat down to roughly 90 degrees knee flexion then stand up. Keep your knees and toes aligned.

Potential injuries:

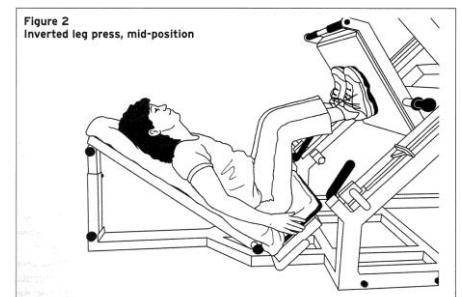
- Anterior knee pain due to squatting too deeply.
- Lower back pain as a result of excessive anterior or posterior pelvic tilt placing too much stress on the lumbar facet joints and surrounding ligaments.
- Bruising to the bone that sticks out at the base of the neck (spinous process of C7) as a result of placing the bar on this bone rather than the soft muscles of your upper trapezius.



Alternative or technical improvement:

- Ensure your knees are always in line with your toes and that your knees do not flex beyond 90 degrees during the descent phase.
- Prior to the squat, execute a slight forward pelvic tilt to lock the facet joints in place. This ensures the lumbar region is secure and can bear the load you are lifting.
- Make sure you place the bar on your upper trapezius and, if necessary, use a piece of foam or rolled up towel between your shoulders and the bar.
- If your calves are tight place suitable blocks under your heels

Other exercises to consider are the front squat, lunge, step ups and leg press.



Dead Lift

Target area: Hamstrings (back of thighs) and lumbar erector spinae (lower back)
Other muscles involved: Gluteus maximus (bottom) and quadriceps (front of thighs)

Basic description:

Stand close to the bar (which is on the floor) with your feet hip to shoulder width apart. Crouch down and place your hands slightly wider than shoulder width on the bar then lift the bar by standing up, leading with your chest not your hips. Bend your knees and hips to return the bar to the floor.

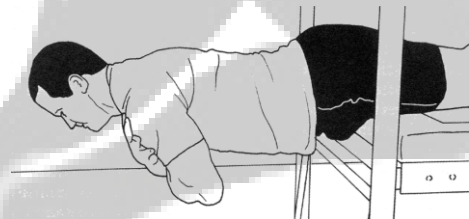
Potential injuries:

- Strain to the muscles of the lumbar region since the shear forces increase if the bar is lifted too far away from your shins.
- Damage to the lumbar discs and ligaments if the lumbar spine is allowed to flex (curve upwards) and the pelvis to adopt a posterior tilt.
- Shoulder instability due to over stretching of the posterior shoulder capsule if the bar is held with the shoulders in a protracted position i.e. hanging forwards thus rounding the shoulders.
- Neck pain can occur if you keep looking up especially during the lowest phases of the lift as the compression forces generated by the weight then become increased.

Alternative or technical improvement:

- Keep the bar close to your shins throughout the phases when the bar is below knee level.
- Adopt a neutral or slightly anteriorly tilted pelvic position to lock the lumbar joints.
- Keep your shoulder blades slightly retracted during the lift.
- Keep your head / neck in a neutral position throughout, looking neither up nor down.
- It may be advantageous to adopt an under / over grip if using a heavy weight. This is where one hand is in a pronated position (palm facing to the back) while the other hand is supinated (palm facing forwards).

Alternatives include the Romanian Dead Lift, dorsal raise (hyperextension) and reverse hyperextension, however these all focus on the posterior chain i.e. back, glutes and hamstrings, with little or no input from the front of the thighs (quads).



Dorsal Raise

Single Arm Bent Over Row

Target area: Latissimus dorsi (back)

Other muscles involved: Rhomboids and mid trapezius (upper back and back of shoulders) and biceps

Basic description:

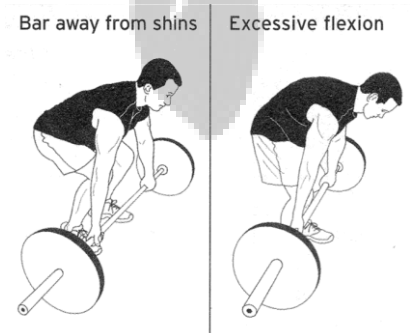
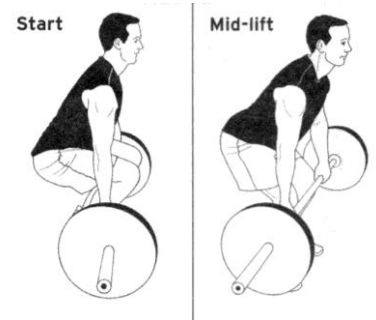
Position yourself with one knee and the ipsilateral (same side) hand on a bench so that you are facing down and your torso is horizontal and the contralateral (opposite side) foot is on the floor. Pull the dumbbell up towards your ribs without moving your torso. Do not allow your elbow to go too far past your back

Potential injuries:

- Shoulder joint instability could occur if the dumbbell is lifted too high as this lifts the elbow and pushes the shoulder joint forward stressing the structures at the front of it.

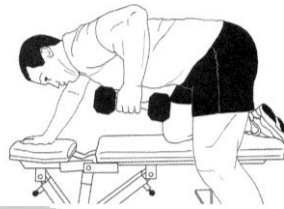
Alternative or technical improvement:

- Pull the dumbbell towards your lower ribs not your arm pit.
- Keep your torso straight i.e. eliminate any rotation unless you are specifically training to develop a combined pulling and rotation activity

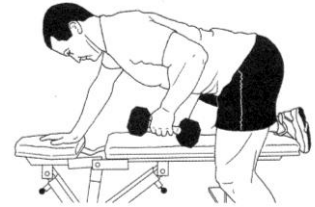




Too much rotation



Elbow too high



Correct form

Alternatives include the bar bell bent over row, seated cable row and the dumbbell pull over

Upright Row

Target area: Deltoids and upper trapezius (shoulders)

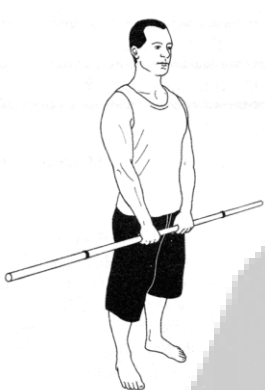
Other muscles involved: Biceps (front of upper arm)

Basic description:

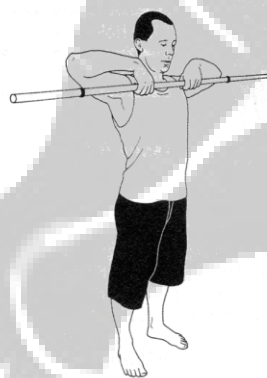
Hold a bar at thigh level with a narrow grip and lift the bar up towards your chin in a vertical axis, leading with your elbows.

Potential injuries:

- Damage to the variety of soft tissue deep to your shoulders can occur if the bar is held too wide preventing the shoulder from externally rotating causing shoulder impingement.
- If the elbows are held too high, reaching ear level at their highest point, the shoulder is forced into further internal rotation and once again impingement occurs.
- If the bar is loaded too much the lifter might initiate the lift with a slight forward bend followed by a backward extension to assist the lift. This can potentially cause strain to the structures in the lower back.

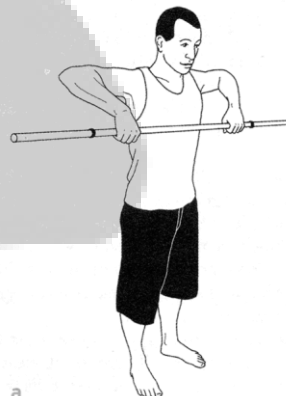


Correct start and finish positions



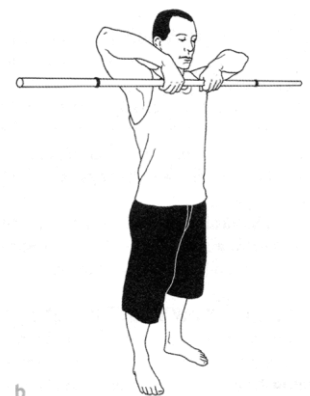
a

Hands too wide



b

Elbows too high



Alternative or technical improvement:

- Have your hands 3 – 8 inches apart.
- Pull your shoulder back at the start of each lift.
- Lead with your elbows throughout.
- Stop the lift 2 – 3 inches below your chin.
- While your wrist will bend as the bar is raised, try not to allow too much flexion as this then lowers the elbows and puts the wrist at risk.
- Remain upright and use a manageable weight.

Other exercises to consider include shoulder shrugs, shoulder press and the lateral raise.

Shoulder Press

Target area: Deltoids (shoulders)

Other muscles involved: Trapezius and triceps (back of upper arm)

Basic description:

Hold two dumbbells at about ear level, slightly wider than shoulder width. Keeping your lower arms vertical, push the dumbbells upwards, over head, until your elbows are nearly straight.

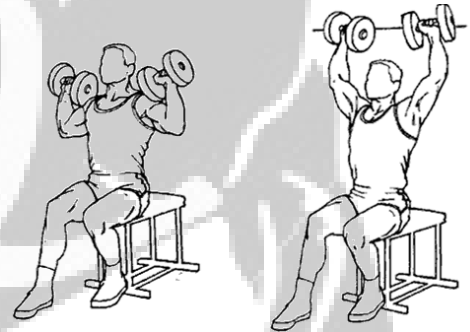
Potential injuries:

- Shoulder instability as a result of lowering the weights too far and holding them further backwards than your eyes.
- Lower back pain brought on by excessive lumbar extension that often is the result of trying to lift a weight that is too heavy.
- Shoulder impingement is the elbows are lifted backwards as the weight is lowered

Alternative or technical improvement:

- Do not have the weight further back than your eyes
- Lower the dumbbell to approximately eye / ear level
- Keep your back straight and your forearms vertical

Other exercises to consider are the lateral raise and upright row.



Bench Dips

Target area: Triceps (back of upper arm)

Other muscles involved: Pecs (chest), lats (back) and anterior deltoids (front of shoulders).

Basic description:

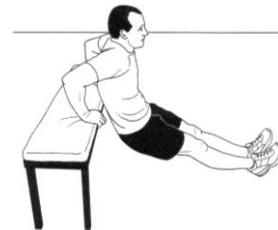
Start seated on a bench with your legs extended on the floor or another bench and your hand either side of your buttocks. Lift yourself off the bench and lower yourself towards the floor by bending your elbows.

Potential injuries:

- Shoulder instability due to a forward torso position
- Rotator cuff strain

Alternative or technical improvement:

- Keep your back as vertical and as close to the bench as you can
- Do not bend your elbows beyond 90 °



Alternatives include dips (assisted?) on the dips machine, triceps push ups, triceps press and triceps extension

Skipping

Target area: Heart and lungs as this is primarily a cardiovascular exercise

Other muscles involved: Calves, hip flexors and shoulders

Basic description:

Continuously jump over a skipping rope turning it with your wrists and passing the rope over your head and under your feet. The more skilled skipper will use a wider array of skills including knee raises, heel digs, toe taps, cross overs, double unders etc.

Potential injuries:

- Lower back pain as a result of landing heavily or on flat feet
- Achilles tendonitis / tendinosis due to excessive skipping and lack of lower leg conditioning
- Shoulder tightness brought about by faulty technique – turn the rope mainly with your wrists
- Headaches as a result of landing heavily or on flat feet

Setting your correct length of rope

ADJUST rope length so that handles reach your ARMPITS



Tie a knot BELOW each handle to shorten & balance.

Alternative or technical improvement:

- Firstly measure the rope correctly so that the handles reach your arm pit (see diagram)
- Adjust the rope length by tying knots *under* the handle **NOT** above it
- Turn the rope with your wrists when performing the basic skills
- Land on the balls of your feet not flat footed or on your heels
- Use a nylon “speed” rope or sectioned (beaded) rope rather than a leather or cotton one
- Try other cardiovascular exercises e.g. running, cycling, rowing etc.

Other common exercises performed poorly include:

- Dorsal raise on the floor – excessive pressure on the discs of the lumbar vertebrae
- Lunges- anterior knee pain
- Leg press – anterior knee pain and lower back pain
- Push ups – neck and lower back pain due to loss of correct alignment
- Sit ups – excessive pressure on the lumbar vertebrae
- Cycling – overloading of specific muscles if the seat is set at the wrong height
- Running – faulty biomechanics can lead to injuries in the ankle, knees, hips, lower back etc.
- **All** resistance machine exercises – pattern overload
- Plank – lower back pain, neck pain and shoulder strain

Mastering correct execution of an exercise is fundamental. It is the most important concern before considering how effective the exercise is. If you cannot perform the movement properly you cannot then make it a safe and effective part of your training programme.

Often there will be physical restrictions preventing you from performing some exercises properly e.g. excessively tight hamstrings will definitely have a negative affect on your ability to perform the bent over row and dead lift.

Seek professional advice (**Paul McKenzie**) and have a full assessment to highlight which muscles are hypertonic (overactive / tight) or hypotonic (underactive) and then address these imbalances first.