

EXERCISE TECHNIQUE INVERTED ROW

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SUMMARY

This article provides a detailed description and photographs of the proper exercise technique for an inverted row.

TYPE OF EXERCISE

The inverted row is an upper-body, multi-joint exercise designed to increase muscular capacity of the posterior chain and upper extremities.

MUSCLES INVOLVED

Muscles used during this exercise: Latissimus Dorsi, Trapezius, Rhomboids, Deltoids, Biceps Brachii, Erector Spinae (5,7)

BENEFITS OF THE EXERCISE

Performing exercises that target the posterior chain are essential in providing an equal balance between upper-body pressing and pulling movements (2,3,9). Press-to-pull ratio of 1:1 is important with maintaining a healthy shoulder stability complex and preventing injuries (3,4,12). This ratio can be measured via typical field tests such as 1 repetition maximum assessments of the bench press and pull-up (2,3,4,12). Previous research has shown that athletes with minor differences in upper-body pushing and pulling strength scores elicit increased power output than those who are dominant in either movement (9). Poor exercise programming can lead to excessive emphasis on pushing movements (e.g., bench press) with neglect on the posterior chain (e.g., back). The most often neglected muscles during upper body resistance training include the trapezius and rhomboids (6). Therefore, the incorporation of multiple pulling resistance exercises, along with simple changes in hand positions (e.g., pronated vs. supinated) or body posture (e.g., elevating or lowering the body) can provide the necessary combination and variety to maintain this balance (12).

The inverted row (IR) is an uncommon bodyweight exercise that can be used to target the posterior chain and upper limb musculature (5,7). The traditional IR is performed using a stable fixed-position barbell on a squat rack or smith machine with the athlete in a supine position directly beneath the bar. The goal is to pull the body up towards the bar in a rowing manner. However, the IR can be easily modified by using a suspension device or changing hand placement and body posture. These modifications allow for multiple variations of this closed-chain exercise. Often times, the IR is utilized as a basic strengthening exercise in order to progress athletes to bodyweight pull-ups. The proper technique of the traditional and suspension inverted row is described as follows.

STARTING POSITION

Athlete

- Secure a barbell on a squat rack or smith machine to the desired height to complete the exercise (e.g., an intermediate athlete will use a waist level bar height).
- Assume a supine position with the chest directly beneath the bar.
- Arms should be fully extended and slightly wider than shoulder-width apart with the hands grasping the bar in an overhand, or pronated, grip.
- Be sure to maintain a closed grip (i.e., thumb wrapped around the barbell) so that the barbell or is fully held by the hands.
- Contract the glutes and abs to keep the trunk straight and rigid throughout the exercise.
- Keep the legs fully extended with the feet together and heels placed on the floor.
- The head and neck should remain in neutral position throughout the exercise (Figure 1).



Figure 1 - Starting and ending position of the inverted row.

PHASE 1

Athlete

- Begin the motion by slowly flexing the elbows and diagonally abducting the shoulder joint in a rowing manner.
- Do not allow the hips to sag during this motion by continually squeezing the glutes and abs to maintain a rigid torso.
- Avoid any movement of the legs by keeping the heels placed firmly on the floor.
- Continue pulling the body towards the bar until the middle of the chest reaches the level of the hands (Figure 2).
- Exhale during this phase of the exercise.
- The tempo for this portion of the movement should be approximately 2-3 seconds.



Figure 2 - Ending position of phase 1.

PHASE 2

Athlete

- Begin the descent by slowly resisting the gravitational force placed upon the body by eccentrically activating the biceps and back musculature.
- Continue this motion until the arms are fully extended (i.e., starting position)(Figure 1).
- Avoid any sagging of the hips by keeping the glutes and abs activated.
- Do not allow any unnecessary movement of the legs.
- Inhale during this phase of the exercise.
- The tempo for this portion of the movement should be approximately 2-3 seconds.

SETS & REPETITIONS

The number of repetitions performed with this exercise will vary depending on the goal of the athlete. However, individuals are encouraged to begin with a bar height in which they are able to successfully perform the prescribed number of repetitions safely and under control. The number of sets performed with this movement will depend on the athletes training status as well (e.g., beginner 1-2, intermediate 2-3, and advanced 3 or more sets).

The following program design variables for the traditional and suspension inverted row are based on the guidelines set forth by the National Strength and Conditioning Association (1). However, modifications can be made based on the principle of specificity for a particular sport or athlete.

- Strength: 3-5 sets, 3-6 reps, 2-5 minute rest period
- Hypertrophy: 3-6 sets, 6-12 reps, 30-90 second rest period
- Endurance: 2-3 sets, ≥ 12 reps, ≤ 30 second rest period

Once the athlete is able to successfully perform two or more repetitions past their target amount on consecutive training sessions, a decrease in bar height is recommended. The following variations may also be used to increase the challenge of the IR.

VARIATIONS

For beginners, there are two slight modifications that can be used to allow the athlete to properly complete the exercise. The first alteration consists of an increase in the elevation of the stable bar position, which will reduce the resistance of the exercise. The second adaptation for beginners is to flex the knees to 90 degrees with the feet placed together and flat on the floor (Figure 3).



Figure 3 - Starting position for a beginner (i.e., knees placed at 90 degrees with feet flat on the floor).

For more intermediate and advanced athletes, there are multiple variations and progressions of the inverted row. Basic variations of this exercise consist of changes in hand orientation and position (e.g., wide versus narrow grip, and a supinated grip). These simple changes in hand position can affect muscular contributions and allow for a greater focus on specific musculature. For example, using the standard pronated grip can be effective at increasing latissimus dorsi, trapezius, and infraspinatus activity during pulling movements (8,12). However, performing the same movements with a supinated grip may increase activation of the biceps brachii as compared to a pronated grip (7,10,12). A wide, pronated grip may also be used to further activate the latissimus dorsi as compared to a narrow or supinated grip (8,10). Sports such as swimming which involving different strokes and pulling motions may benefit from performing these hand position variations of the IR.

Another simple variation includes the use of a suspension device to perform the inverted row. To perform this version of the IR, attach a suspension device to a secured fixture from above (e.g., Smith machine or pull-up bar) and adjust the handles accordingly (i.e., above the waist for a beginner or waist level for an advanced athlete)(Figure 4). By using the suspension device, athletes can perform the IR when minimal equipment is available. Furthermore, multi-joint dynamic movements performed with instability training devices (such as suspension handles) may lower the risk of injuries by increasing joint stabilization (11).



Figure 4 - Variation of the IR using a suspension device.

However, if a greater challenge is warranted, there are two techniques to increase intensity of the IR. By elevating the feet (e.g., feet placed on top of a bench)(Figure 5) or utilizing a weighted vest the resistance is increased; thereby, challenging the athlete to a greater extent. Once an athlete can successfully perform the advanced variations then a bodyweight pull-up routine is advised to increase the challenge of the posterior chain.



Figure 5 - Advanced variation of the IR with feet elevated.

PRACTICAL APPLICATION

As stated previously, practitioners should be aware that an imbalance between the push-to-pull ratio can lead to chronic shoulder musculature injuries and decreased sports performance (5,8,10). Therefore, appropriate exercise programming and incorporation of movements, such as the inverted row, is essential in reducing this common imbalance (5). Although, the inverted row does not play a major role in the majority of sports, strengthening the posterior chain can directly relate to an increase in sports performance due to an increased balance in shoulder musculature stabilization (3,4,8,10,12). Sports that including various pulling motions (e.g., gymnastics, wrestling, rowing, etc.) may also gain benefits from performing this exercise. The IR can be used as an appropriate modification to the bent-over or seated row, due to the high upper back and thoracic region muscular activation, as well as the decreased stress and strain placed on the lumbar region (5). Practitioners should also be aware that the IR serves as a precursor for athletes unable to perform bodyweight pull-ups, by progressing through the advanced variations to help strengthen the posterior chain.

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