The Close-Grip Bench Press

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ABSTRACT

THE CLOSE-GRIP BENCH PRESS HAS RECEIVED LIMITED ANALYSIS IN THE PROFESSIONAL LITERATURE. THEREFORE, THIS ARTICLE WILL REVIEW THE EXISTING LITERATURE THAT DOCUMENTS THE TECHNIQUE, MUSCLE ACTIVATION CHANGES THAT OCCUR WHEN PERFORMING THIS EXERCISE, AND THE RESULTING IMPLICATIONS. THIS RELATES TO POTENTIAL HYPERTROPHY AND STRENGTH ADAPTATIONS THAT MAY RESULT FOR MUSCLES INVOLVED IN ELBOW EXTENSION (E.G., TRICEPS BRACHII) AND ARM FLEXION (E.G., PECTORALIS MAJOR), AS WELL AS SPORT-SPECIFIC POWER ADAPTATIONS. THE BENEFITS OF USING A CLOSER GRIP DURING THE BENCH PRESS FOR CERTAIN INDIVIDUALS WILL BE ACKNOWLEDGED. LAST, THE EXECUTION OF THIS EXERCISE (STARTING POSITION, BAR DESCENT, AND BAR ASCENT) WILL BE DETAILED.

INTRODUCTION

The bench press is one of the foundational exercises used to develop upper-body pushing strength in athletes (1,18,28) and is also used to encourage muscle hypertrophy in the upper body (25). The exercise is relatively easy to perform and can be taught to most individuals. In the traditional bench press, the individual selects a grip width that provides the ideal mechanical advantage, and thus allows them to generate the greatest force and power relative to their anthropometry and strength. The grip width will likely fall within a range of 165–200% of biacromial distance (39). Biacromial distance is typically measured as the breadth between the most lateral points on the acromion processes (40). Although typically performed with a barbell, the bench press exercise can be performed with dumbbells (19), a machine (15), and on incline or decline benches (17,32). The traditional bench press performed on a flat bench can also be modified by altering the width of the grip on the bar.

The close-grip bench press is a variation of the traditional bench press exercise (5,9,28,39), which could be used for both hypertrophy and strength purposes. This version of the bench press is performed with a narrower grip, typically with the hands positioned on the bar a distance equivalent to 95–100% of biacromial distance (5,9,28,39). The hand position for the close-grip bench press, versus that for the traditional bench press, can be seen in Figure 1. Lehman (28) noted that the close-grip bench press is popular, as it was anecdotally thought that greater emphasis would be placed on the triceps brachii, which could potentially lead to increases in size of these muscles. As will be discussed, there are changes to the degree of activations for the prime movers within the bench press that provide credence to this belief (5,9,28). In addition to this, there could be application to sports performance when using the close-grip bench press for strength development. Many sports require explosive flexion of the shoulders and extension of the elbows to drive the hands forward from a position that starts with the elbow being kept close to the frame of the torso (10,11,24,34,41,42). Some examples of this include blocking by offensive linemen in football (34), fending in rugby (41,42), and passing the ball in basketball and netball (10,11,24). Given the potential application of the close-grip bench press for both general and athletic populations, it is important for the strength and conditioning professional to understand this exercise and its applications. Greater understanding of the close-grip bench press relates to the technical changes that may occur in this exercise when compared with a traditional bench press, and the differences in muscle activation patterns.

CLOSE-GRIP BENCH PRESS TECHNIQUE

The general movement patterns between the traditional and close-grip bench press are relatively similar (14). However, there are certain technical changes that should be noted. These changes can influence the load lifted, with a close-grip bench press usually resulting in lighter maximal loads when

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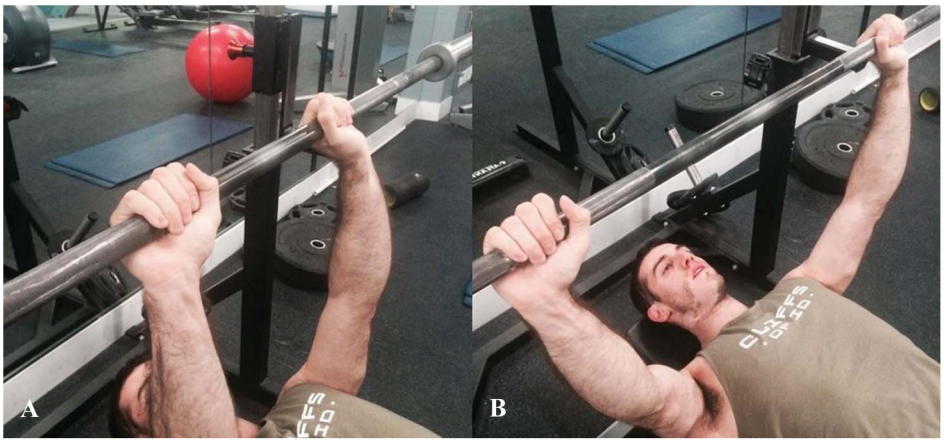

Figure 1. The hand position and grip width for the close-grip (A) and traditional (B) bench press.

compared with bench presses using wider grip widths (18,39). Gomo and van den Tillaar (18) conducted a 3-dimensional motion analyses of wide, medium, and narrow (i.e., close) grip maximal bench presses to investigate the sticking region of these exercises in male powerlifters. The sticking region is the section of the lift where the upward velocity of the bar is momentarily decreased (30) and has been described as the duration from peak barbell velocity until the first local minimum velocity (12,29,35). This is the point within a lift where an individual may have trouble in moving the bar and may require assistance from a spotter and is typically measured as the height of the bar relative to the chest (37,38). The wide, medium, and narrow grip widths were defined with mean distances of 74.54 ± 9.75 centimeters (cm), 56.79 ± 6.04 cm, and 39.17 ± 3.51 cm, respectively. The bench press with the narrow grip featured greater shoulder flexion at the start of bar ascent, first peak velocity, and the first local minimum velocity. Shoulder abduction was also lower at the start of bar ascent and at first peak velocity. Gomo and van den Tillaar (18) found the lightest load was lifted with the narrow grip, which was related to reductions in the moment arms of the elbow and shoulder joints during the bench press. This would likely result in lower torque generation at each joint, which in turn can reduce the force that can be generated against the bar. However, perhaps because of the lighter load, Gomo and van den Tillaar (18) also noted that the bench press performed with the narrow grip had a greater peak velocity when compared with the other 2 bench press exercises. This could have implications for the use of the close-grip bench press as a more power-based or speed-based resistance exercise.

The location of the sticking region within the bench press can also be influenced by the grip width. Gomo and van den Tillaar (18) found that the peak velocity, and local minimum velocity, occurred higher above the chest for a maximal bench press performed with a narrow grip by male powerlifters. This is important, as spotters should be aware of when the sticking region may occur for an individual within the close-grip bench press. Nevertheless, despite these technical variations, there is still application for the close-grip bench press in hypertrophy or strength training programs. This is further emphasized when considering which muscles are most active within the close-grip bench press.

CLOSE-GRIP BENCH PRESS AND MUSCLE ACTIVATION

As stated previously, the close-grip bench press was often used with the belief that the triceps would be targeted more within this exercise than the traditional bench press (28). Several studies have indicated that this is indeed the case (5,9,28). Barnett et al. (5) compared the muscle activity of the sternocostal and clavicular head of the pectoralis major, anterior deltoid, and long head of the triceps brachii using the bench press with a narrow (100% of biacromial distance) or wide (200% of biacromial distance) grip lifting 80% of one-repetition maximum in weight-trained men. The narrow grip led to reduced activity of the anterior deltoid when compared with the wide grip, but no effect on the sternocostal head of the pectoralis major. Interestingly, both the clavicular head of the pectoralis major and long head of the triceps brachii experienced greater activity during the bench press with the narrow grip. Barnett et al. (5) stated that the greater activation of the triceps brachii was likely because of a greater range of elbow motion in the bench press with the narrow grip, which demanded a greater recruitment of motor units for this muscle.

Clemons and Aaron (9) measured the activity of the pectoralis major, anterior deltoid, triceps brachii, and biceps brachii during the bench press across a range of grip widths (100, 130, 165, and 190% of biacromial distance) in strength-trained men. As for Barnett et al. (5), 80% of one-repetition maximum was used for the bench press exercises. The collective activity of each

of these muscles was lowest in the bench press with the narrowest grip width (100% of biacromial distance). However, there were no significant differences between individual muscles across the different grip widths, and the triceps brachii were highly active in all bench press conditions. Lehman (28) compared the activity of the clavicular and sternoclavicular portions of the pectoralis major, in addition to the lateral head of the triceps brachii, in weight-trained men completing a bench press with a grip width of 100%, approximately 150% (the midpoint between the 100 and 200% biacromial distance grip widths), and 200% of biacromial distance. The subjects selected a load that they could complete 12 repetitions, and the same load was used for all grip conditions. The results from Lehman (28) indicated that there was no effect of grip width for the activity of the clavicular portion of the pectoralis major. Although activity of the sternoclavicular portion of the pectoralis major tended to decrease with reduced grip width, the activity of the lateral head of the triceps brachii significantly increased. Lehman (28) noted that this result followed conventional wisdom that a narrower grip resulted in increased activation of the triceps brachii.

Collectively considering the results of these studies (5,9,28), it can be observed that even though there may be greater contributions from the triceps brachii, the pectoralis major is still highly active in the close-grip bench press. Furthermore, Lehman (28) recommended that the choice of grip width for the bench press should be guided by the requirements of the athlete's sport. This has implications for individuals involved in sports, which involve forceful flexion of the shoulders and extension of the elbows during the performance of certain skills, as well as those who may have restrictions in performing the traditional bench press.

POTENTIAL BENEFITS FOR USING THE CLOSE-GRIP BENCH PRESS

The potential benefits and adaptations that could result from the regular use of the close-grip bench will occur within the context of the technique (18) and muscle activation (5,9,28) that occur during this lift. For example, and as previously noted, the close-grip bench press has often been used as an exercise to encourage hypertrophy of the triceps brachii (28). However, the pectoralis major is still highly active in the close-grip bench press (5,28). Thus, if the loading, sets, and repetition ranges are appropriate, regular use of the close-grip bench press should contribute to hypertrophy of those muscles (i.e., the triceps brachii and pectoralis major, and to a lesser extent the anterior deltoids) involved in flexing the shoulders and extending the elbows.

Gomo and van den Tillaar (18) noted that the close-grip bench features reduced shoulder abduction, which means the arms are kept close to the frame of the torso before they are extended. This movement is like many of the pushing actions required in sports. For example, the chest pass in basketball and netball uses this type of arm action from a standing position (10,11,24). In addition to this, the medicine ball chest pass, which is used as a test of upper-body power, has an action like the close-grip bench press, as the hands are positioned closer to the frame of the body to hold the medicine ball (10,22,36). The close-grip bench press could be used to develop the strength foundation required for the upper-body power demands required in court sports such as basketball and netball.

Contact and invasion sports also require force development from a hand position close to the frame of the body. An excellent example of this is for offensive linemen in American football. Blocking requires linemen to drive their hands into an opponent in the chest region to knock them off-balance or move them in a certain direction (34). If the hands are positioned too wide, the block will be ineffective. Fending, or "throwing a stiff-arm," is also a necessary skill in American football and sports such as rugby league and rugby union (41,42). Although this is a unilateral action, the fend or stiff-arm is often initiated from a position where the shoulder is adducted and held closer to the body, before the forearm is then forcefully extended into the opponent. The close-grip bench press could be used as a supplemental exercise for strength development within the actions that are required for invasion sports.

Bench pressing with a closer grip may also be beneficial for those individuals who find pressing with a wider grip uncomfortable. The use of a wider grip ($\geq$1.5 times biacromial distance) can place undue stress on the shoulder joint for some individuals because of the shoulder horizontal abduction that occurs during bar descent (13,21,23). This can be exacerbated if the arms are lowered below the torso (26), which can occur during a bench press with a wider grip (18). As a result, Haupt (23) recommended using a narrower grip for those individuals who experience shoulder discomfort when performing the traditional bench press. The results from Barnett et al. (5) and Lehman (28) indicate that even with the close grip, the pectoralis major is highly active in the close-grip bench press, and could still experience hypertrophy and strength adaptations with long-term use of this exercise.

It should be emphasized that this review does not to suggest that the traditional bench press be eliminated from hypertrophy or strength training regimes. Rather, this information highlights that the close-grip bench press would be an appropriate upper-body strength exercise variation for many members of the general population, and athletes as well. In addition to this, individuals who want to limit excessive shoulder horizontal abduction during the bench press could use the close-grip variation (13,21,23,26). Strength and conditioning professionals who decide to use the close-grip bench press in programs for their athletes or clients should use the typical guidelines for resistance training. Kuntz et al. (27) summarized the general load, volume,

Table
General resistance training guidelines for hypertrophy, maximal strength, and peak power that can be used for the close-grip bench press

	Hypertrophy	Maximal strength	Peak power
Load	67–85%	≥85%	30–50%
Sets	3–6	2–6	3–5
Repetitions	6–12	≤6	≤6
Rest	½–1½ min	2–5 min	2–5 min

The load is presented as a percentage of one-repetition maximum. Adapted from Kuntz et al. (27). The loads for peak power are based on findings and recommendations previous research (3,8,33,43).

and intensity guidelines provided by the National Strength and Conditioning Association, and these are adapted here and shown in the Table. This table documents how the strength and conditioning professional could program the close-grip bench press to encourage hypertrophy, maximal strength, and peak power. If the strength and conditioning professional is using the close-grip bench press to maximize power, it is recommended that a load equaling approximately 30–50% of one-repetition maximum is used (3,8,33,43). The actual load used depends on the strength level of the athlete, as stronger athletes may generate peak power at a heavier load when compared with weaker athletes (3,4). This will ensure that the bar is moved with a higher velocity, which should engender a more optimal crossover to the power-based actions required in different sports (10,11,24,34,41,42).

EXERCISE EXECUTION

The execution of the traditional bench press has been described previously (1,2,14,16,19,20,31). Nevertheless, the execution of the close-grip bench press exercise will be illustrated here, and this description is adapted from Graham (20). Fry (14) briefly described the close-grip bench press, and noted that the execution of the close-grip bench press is basically the same as that for the barbell bench press, save for the positioning of the hands. This exercise description will involve the use of a flat bench. Figure 2A displays the starting position for the close-grip bench press. Figure 2B shows the bottom position for this lift.

STARTING POSITION

- The barbell should be positioned on 2 equal standards or back stops at a height where the individual can unrack the bar relatively comfortably (the elbows should be slightly bent when grasping the bar in this position). The narrower grip could change where the bar is positioned in the back stops compared with the traditional bench press. Fry (14) has recommended the use of a higher standard or back-stop position for the bar.
- The individual should lie supine on the flat bench, with the head, shoulders, upper-back, and buttocks

Figure 2. The start and finish (A) and bottom (B) position for the close-grip bench press.

contacting the bench. The feet should be placed firmly on the floor. If the bench is too high for the individual to do this, then aerobic steps or another bench can be used to provide this support. In this position, the head should be positioned underneath the barbell.

- The hands should be positioned on the bar at approximately the biacromial distance for the individual, or slightly less than this (i.e., between 95 and 100% of biacromial distance). A closed, pronated grip should be used. Because of this hand position, and depending on the height of the standards or back stops, a spotter may be required to assist with lift-off.
- The barbell should then be pressed from this position (with assistance if required), such that the elbows are fully extended (Figure 2A). This is the starting position.

BAR DESCENT–ECCENTRIC PHASE

- The individual should inhale during the eccentric phase of the lift. The bar should be lowered in a slow and controlled fashion toward the chest. Throughout the eccentric phase of the close-grip bench press, the head, shoulders, upper-back, and buttocks should remain in contact with the bench, whereas the feet should also remain in contact with the floor (or other supportive equipment such as a step or bench).
- The elbows should be tucked toward the sides of the body and not allowed to flare out. As noted by Graham (20), the wrists should be kept firm and rigid so that the bar does not slip into the distal portion of the hand and remains above the longitudinal axis of the ulna.
- The forearms should be relatively parallel to one another and perpendicular to the floor, such that the bar can be lowered to the level of the xiphoid process of the sternum (Figure 2B). As long as the individual has no physical restrictions, the bar should slightly contact the chest to ensure a full range of motion (7). The bar should not be bounced off the chest. Depending on whether the grip width was 100% of biacromial width or slightly less, the hands may also contact the chest.

BAR ASCENT–CONCENTRIC PHASE

- The individual should exhale during the concentric phase of the lift. If the focus of the exercise is on strength or power development, the bar should be driven from the chest as quickly as possible. Even though a heavier load will result in a relatively slower bar velocity, the intent to move a load is important for the improvement of power (6).
- Throughout the concentric phase of the close-grip bench press, the head, shoulders, upper-back, and buttocks should remain in contact with the bench, whereas the feet should also remain in contact with the floor (or other supportive equipment such as a step or bench). The pelvis should not be lifted from the bench, and the natural lordosis of the spine should be maintained.
- The wrists should remain rigid and the forearms relatively parallel to each other and perpendicular to the floor. The elbows should not be allowed to flare out and should be kept close to the side of the body.
- The barbell should be pressed until the elbows are fully extended, but not forcefully locked out (20). When the close-grip bench press is completed, the bar should be in line with the wrist, elbow, and shoulder joints (Figure 2A).
- When the set is completed, the bar should be returned to the standards or back stops. Again, because of the narrow grip width, the spotter may need to assist the individual in returning the bar. The grip should not be released until the bar is safely in the standards or back stops (the spotter can communicate this to the lifter as well).

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