

# Effects of Grip Width on Bench Press 1RM in College Males

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## Abstract

The Bench Press is said to be the most important of all upper body exercises (Deaton, Ras, 2019). This exercise incorporates several of the muscles in the upper body and is included in training programs for several different sports and activities. The participants of this study were 30 college males, each with at least 1 year of previous training experience and no previous injuries or disabilities that would impair bench press performance. Each of the 30 participants were randomly assigned to 1 of three groups with 10 participants in each group: close grip bench press (100% shoulder width), moderate grip bench press (135% shoulder width), and wide grip bench press (170% shoulder width). This study assessed how grip width while performing this exercise effected strength over time. This was done through a pre-testing session, followed by a 6 week training period, and then a post-testing session. Participants performed a 1RM as a measure of upper body strength during each testing session and percent change was assessed. During the 6 week training protocol, participants trained 3 times per week with at least 48 hours between each session. During each training session, the participants followed a strict 15 minute warm-up protocol before starting the training protocol. The training protocol consisted of 3 sets or 6 repetitions of bench press, with each set's weight changed to a weight where by the 6<sup>th</sup> repetition, the participant would reach momentary failure. The moderate grip bench press group was hypothesized to have the largest percent change over the duration of the study. Correlations and data analysis of the study were done using Statistical Package for Social Sciences (SPSS) software. Statistically significant findings were given a P-value of .05 or less (P<.05).

## Research Design

- Research design for this study took a basic quantitative approach.

- This study was done in a gym on campus for convenience, and assessed the effect of bench press grip width on overall strength over a period of time. The numbers for each participant were recorded and kept as a record in order to assess improvements over time.

- This study was also characterized to have a true experimental design as each participant was randomly assigned to a group. The independent variable in this study was the grip width used while bench pressing. This was used to determine the dependent variable which was the overall strength of the participant and how it changed over time.

- The data recorded was considered categorical data. The data was characterized this way because each of the participants were placed into one of three groups (ten in each), in which each group was a different category where the data recorded had no specific range to be expected.

- To ensure validity, a one repetition maximum (1RM) was used to measure overall strength. This test of overall strength has been tested and is a reliable measure of maximum strength when performing a bench press (Dong-il et al. 2012). The training protocol for this study was also verified as a reliable protocol for gaining strength (Aarsog et al. 2011). This training protocol entailed three sets of six repetitions, in which each set was performed at a weight where the participant was reaching temporary failure each set.

- One other aspect of the training protocol that was verified to be a valid protocol for a maximum level performance was the warm-up protocol. The warm-up used in this study was a total of fifteen minutes long and included 10 minutes of total body warm-up at a light intensity while the other 5 minutes were done with intervals of high intensity (AKCA et al. 2018).

- Another important aspect of any training protocol is recovery time. A study done by Moran-Navarro et al. in 2017 assessed the recovery time needed in 3 different training protocols. One of the training protocols examined was a protocol similar to the one used in this study in that participants lifted until temporary failure. This training protocol was verified by this study to take at least 48 hours of recovery time in order for the participant to be ready to go again and perform at the same level (Moran-Navarro et al. 2017).

## Methods

The Participants of this study were 30 college aged males with at least 1 year of previous lifting experience. This was done to eliminate the ceiling-floor effects. This is the tendency for beginners to show more improvement faster when starting a training protocol because they are further away from their biological ceiling or their full potential. Other exclusion criteria include any previous injury or disability that would possibly impair bench press maximal performance. This was to be sure the sample of participants were all equally able to perform at their highest capability. The International Review Board (IRB) did a full review on this study due to the risk of injury to the participants while training and performing 1 repetition maximum tests. Each of the participants also were required to sign an informed consent form prior to participating in this study so that they were all aware of the possible dangers of the study.

## Training Groups

- The close grip bench press group had a grip width of 100% shoulder width, or just shoulder width. This style of bench press incorporates a lot more muscles within the arm as compared to the moderate grip bench press and the wide grip bench press, the triceps brachii to be more specific. The muscles of the chest and shoulder girdle are also utilized in this style of bench press. This group contained 10 participants that were each randomly assigned.
- The moderate grip bench press group had a grip width of 135% shoulder width, which is slightly wider than shoulder width. This style of bench press incorporates the muscles of the arm as well as the muscles of the chest more evenly as compared to the close grip bench press and the wide grip bench press groups. The muscles of the shoulder girdle are also incorporated into this variation. This group also contained 10 participants that were randomly assigned.
- The last bench press variation was the wide grip bench press group which was 170% shoulder width. This bench press style incorporates more of the chest muscles when compared to the close grip bench press and moderate grip bench press groups. The muscles of the arm and shoulder girdle are also activated during this variation. This group also contained 10 participants that were randomly assigned. This bench press variation has been associated with higher risk of shoulder injury.

### Close Grip Bench Press



### Moderate Grip Bench Press



### Wide Grip Bench Press



## Warm Up Protocol

The subjects were then taken through a 15 minute warm up protocol. For the first 10 minutes, each of the participants did a dynamic full body warm up consisting of lunges in place, resistance band pull aparts, squat jumps, resistance band curls, resistance band RDL's, medicine ball slams, and kettle bell swings. All exercises were done for 15 repetitions at a moderate intensity and repeated until the 10 minute period came to an end. The following 5 minute portion of the warm up moved into an interval style warm up with 15 second intervals of higher intensity work with 45 seconds of moderate intensity work in between until the 5 minutes was up. The exercises used for the moderate intensity portion were triceps push downs using a resistance band. The high intensity portion was high speed plate press with a 45 pound plate as many reps as possible within a 15 second span.

### Pre-Testing

- 15 minute warm up was completed
- 5 warm up sets were allowed on Bench Press
- 1RM was attempted (participants went until they failed or form was unacceptable)
- Numbers were recorded

### Training Protocol

- 3 sessions per week (48 hours in between)
- 15 minute warm up was completed
- 3 sets of 6 repetitions of bench press were completed (Until failure)
- Training portion of study lasted 6 weeks

### Post-Testing

- 15 minute warm up was completed
- 5 warm up sets were allowed on bench press
- 1RM was attempted (Participants went until they failed or form was unacceptable)
- Numbers were recorded

## Data Analysis

- The data recorded was used to test the null hypothesis which was that no statistical significance was found between each of the three bench press grip widths.

- The research hypothesis was that the moderate grip bench press group would show the most percent change when compared to the close grip bench press and the wide grip bench press groups.

- Alternative hypotheses include that the close grip bench press group or the wide grip bench press group will have a higher percent change rather than the moderate grip bench press.

- The data was put into the statistical package for social sciences (SPSS) software and the descriptive statistics were used to determine percent changes over each group from before and after testing protocols.

- These numbers were defined as ordinal data as the higher percent change values would be the group that experienced the most improvement.

## Implications

This research project has a few implications that could be beneficial to others. There are some other studies out there that are similar to this one in nature as far as assessing bench press grip width and one repetition maximum numbers. The main difference between this study and others like it is that this study covers the training effects of using one bench press grip width over time as compared to other variations. This could give insight into possible alterations to training programs that would be beneficial based on what exactly the individual is training for. If the null hypothesis is proven wrong during this study, this study would add valuable information to the current literature.

## References

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