EFFECTS OF THE BENCH SHIRT ON SELECTED BENCH PRESS MECHANICS

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KEY WORDS: power lifting, bench press, bar velocity, bar path, bench shirt.

INTRODUCTION: Power lifting is an individual sport enjoyed by participants in over 78 countries. Participants compete in three separate lifts and the lifter with the highest total is the winner. However, this study is concerned purely with the bench press. The "bench shirt" is a cotton/polyester, single-ply form-fitting shirt that is used by lifters to enhance performance during the bench press. Power lifters use these shirts in an attempt to increase the load lifted in competition. However, it is possible that these shirts, due to their extreme form fit to the body, could alter the natural motion of the bench press exercise. Researchers have investigated the mechanics of the bench press, and identified proper technique (Judge, 1998; Madsen & McLaughlin, 1984). Proper mechanics dictate that for any experienced lifter there exists a consistent order of bar velocity (increasing velocity off of the chest, decreasing velocity through the "sticking region," increasing velocity after the sticking region, final decreasing velocity at the finish) (Madsen & McLaughlin, 1984). The bar path should be as indicated in Figure 1. However, no published studies have demonstrated the effect the bench shirt on bench press lifting technique. Therefore, the purpose of this study was to determine the changes in bar path and bar velocity when performing the bench press shirted versus raw (no bench shirt).

METHODS: Five male adults with advanced knowledge of the bench press volunteered to participate in both shirted and raw conditions of this study. Advanced knowledge was defined as having at least one current year of experience bench pressing and being able to bench at least his own body weight. All participants performed a raw bench press on the first session, and a shirted bench press on the second session. A single 60 Hz JVC camera was placed in the sagittal view of the lifter as he lay flat on a standard bench accompanied by two spotters. The heaviest completed lift in three attempts was recorded and analyzed for each condition. The bar was digitized two-dimensionally, and the bar X and Y coordinates and linear velocity were obtained for the up and down phases using the Peak Motus software (ver. 7.2.3, Peak Performance Technologies, Inc., Englewood, CO). Standard deviations of the X and Y coordinates for the bar were determined in reference to the starting position of each phase. A dependent t-test was to statistically reduce the data (alpha = .05).

RESULTS AND DISCUSSION: Preliminary analysis of bar path and bar velocity shows that use of the bench shirt does alter the mechanics of the bench press in experienced weight lifters (Figures 1 & 2). Specifically, during the up phase when the bar came off of the chest, it traversed immediately in the negative x (toward the head) direction, thus posing a safety risk for the lifter and the spotters. Participants did, however, lift greater loads (115.7 v 106.6 kg). This indicates that these changes, while contributing to performance results, may impact the safeness of the lift.

Figure 1. bar path raw condition.

Figure 2. bar path shirted condition.

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