The Effects of Commercially Available Holographic Bands on Strength, Balance, and Flexibility

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INTRODUCTION

Popularity among commercially available holographic bands has risen in the exercise and sports industry. The manufacturers of the holographic bands propose the bands immediately improve physical and mental attributes (e.g., flexibility, balance, strength, endurance, and overall well being). The manufacturers claim that the hologram discs are embedded with energetic information that communicates with the meridians of your body and can help promote a more balanced, rhythmic and healthy body. The claims are traditionally tested with a standing stability test with and without the bands, or by word of mouth on message boards that are provided by the manufacturers websites. Currently, there is not a tangible amount of research to support these claims.

PURPOSE

The purpose of the study was to examine the acute effects of commercially available holographic wrist bands on flexibility, balance, and strength.

HYPOTHESIS

There will be no difference in balance, strength, and flexibility between the three experimental trials. That is, the holographic bands will have no effect on balance, strength, and flexibility.

METHODS

●IRB Approval: The study was approved by the Institutional Review Board (Human Subjects) at Texas A&M University-Kingsville.

●Subjects: All subjects provided informed consent prior to participation. Twelve college-age volunteers were recruited from the student population at Texas A&M University-Kingsville. Three of the subjects were female and nine of the subjects were male. Subjects were 23.1±4.3 years old, 76.7±17.6 kg body mass, 171.6±9.8 cm body stature, and 19.6±8.3% body fat. The subjects were not blinded to the purpose of the study; however, they were blinded to the treatments.

●Pre-participation Screening/Testing: All subjects underwent a health screening according to guidelines set forth by the American College of Sports Medicine. Only subjects classified as low or moderate risk for untoward events during exercise based on these guidelines were allowed to participate. The following measurements were also made pre-participation: body mass utilizing a standard physicians scale, body stature utilizing a stadiometer, and percent body fat using whole body air displacement plethysmography (a.k.a., Bod Pod).

●Stork Stand Test (Static Balance): The Stork Stand Test was used to measure static balance. The test required the subjects to stand on one foot of their dominant leg, place their other foot on the inside of their supporting knee, and place their hands on their hips. On a given signal, the subject raised their heel from the floor and maintain their balance as long as possible without moving the ball of the foot from its initial position, or letting the heel touch the floor. The time spent in balance (sec) was recorded. Subjects performed three repetitions of the test and the best time out of the three repetitions was used for data analysis.

METHODS, cont.

●Sit-and-Reach Test (Lower Body Flexibility): The YMCA Sit-and-Reach Test was used to measure the range of motion about the coxageal (hip) joints (hamstrings, lower back muscular flexibility). For this test, a yard stick was placed on the floor with a 12 in piece of tape placed across it at right angles to the 15-in mark on the stick. Subjects were required to sit on the floor with their yard stick between their legs and their heels placed at each end of the tape that crosses the yardstick (i.e., feet were 12 in apart.). Subjects were required to slowly reach forward with both hands overlapping as far as possible, and then hold this point for 2 sec. The most distant point reached (in) was recorded and converted to cm. Subjects performed three repetitions of the test and the best measure out of the three repetitions was used for data analysis.

●Isometric Strength Test (Arm and Shoulder Strength): An isometric force recording apparatus comprised of a platform, chain, hand bar, and electronic load cell with a digital recorder was used to measure arm and shoulder strength. Subjects were required to engage in a 3 second maximal voluntary isometric contraction using an arm lift motion (elbow flexion, biceps curl) and a shoulder lift motion (shoulder shrug). The maximal external force produced was recorded (kg). Subjects performed three repetitions of each test and the greatest force production (kg) out of the three repetitions for each test used for data analysis.

●Experimental Design:

►Day 1 (Practice Trial) : At least two days prior to each subject's first experimental trial, participants were given the opportunity to practice the static balance test, the flexibility test, and the isometric strength test three times. Prior to starting the three practice trials the investigator demonstrated and explained the tests to the participants.

►Days 2-4 (Experimental Trials 1-3): The experimental trials were conducted in a blind balanced crossover fashion. On each of the three experimental trial days, the subjects performed the exercise tests (static balance test, lower body flexibility test, isometric strength tests (2)) while wearing a commercially available holographic band covered by a wrist sweatband (holographic band = HB), a generic silicon band covered by a wrist sweatband (placebo band = PB), or just a wrist sweatband (control band = CB).

●Statistical Analysis: Differences in static balance (sec), lower body flexibility (cm), arm strength (kg), and shoulder strength (kg) across the three experimental trials (HB, PB, CB) were analyzed using an analysis of variance with repeated measures (0 between, 1 within), α=0.05.

RESULTS

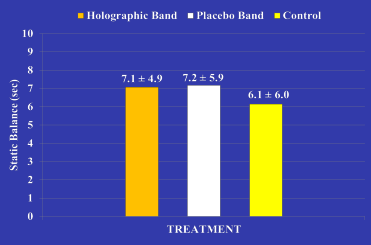

Figure 1: Holographic Band Effect on Static Balance. Static balance was not significantly different in the subjects between the HB, PB and CB trials (p>0.05).

RESULTS, cont.

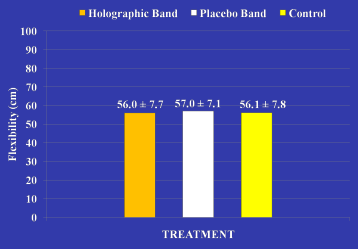

Figure 2: Holographic Band Effect on Lower Body Flexibility. Lower body flexibility was not significantly different in the subjects between the HB, PB and CB trials (p>0.05).

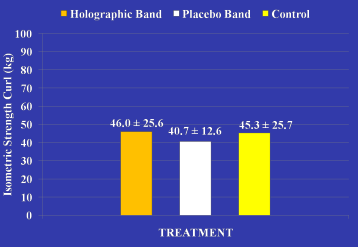

Figure 3: Holographic Band Effect on Arm Isometric Strength. Arm strength was not significantly different in the subjects between the HB, PB and CB trials (p>0.05).

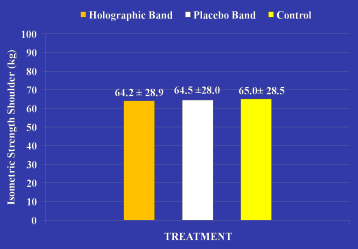

Figure 4: Holographic Band Effect on Shoulder Isometric Strength. Shoulder strength was not significantly different in the subjects between the HB, PB and CB trials (p>0.05).

CONCLUSIONS

Contrary to popular belief among college students and consumers, holographic bands do not seem to have an acute influence on flexibility, balance, or strength. The results from this research gives support to the research hypothesis ; while wearing the holographic band, the placebo band, and control band, the subjects would experience no difference in flexibility, balance, or strength. According to the analysis of variance with repeated measures, mean values between all four tests, the stork stand, the modified sit-and-reach, the isometric bicep strength, and the isometric shoulder girdle strength, there was not a statistical difference between the four means. Given the lack of significant research on commercially available holographic bands, it could be argued that more detailed and extensive studies should be conducted on the claims made by the manufacturers, such that the results could be made available to consumers.