

primary purpose, two testers measured a volume-standardized Plexi-glass cylinder ten consecutive times to determined validity of the volumetric measurement system. Volume was determined by weighing the displaced water. Tester #1 reported a mean of 1072 ml; (range 1065-1075 ml) standard error of measurement (SEM) of .049 ml, and tester #2 reported a mean of 1074 ml (range 1065-1079 ml) SEM of .077 ml. The actual volume of the standardized cylinder was 1079 ml. For the secondary purpose, twenty college age students were recruited as subjects. Subjects were eliminated from the study if they reported lower extremity pathology during the past six months. Eleven females and nine males (age = 20.5 ± 1.4 yr; height = 172.9 ± 9.7 cm; weight = 75.8 ± 16.5 kg) completed the study. Each subject was randomly assigned to measurement method (volumetric and tape measure) and tester. The volumetric measurement involved measuring the volume of the right ankle. Limb volume was determined by weighing the amount of displaced water. The same ankle was then measured using a figure-eight tape measure. Statistical analysis produced intertester correlation coefficient values of 0.997 for the volumetric measurements and 0.947 for the tape measurements. Correlation coefficients, using the collapsed data of both examiners, between the volumetric measurements and tape measurements yielded a correlation coefficient of 0.917. In conclusion, the custom made volumetric measurement system had been shown to be a valid and reliable measurement tool. However, this method is time consuming. Tape measurement was also shown to be a reliable method. The later method, however, offers a few advantages. It is simple, inexpensive, and can be performed in a short amount of time.

Activation And Fatigue Of The Peroneal Muscle Group During Two Open Kinetic Chain Exercises

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Lateral ankle sprains are among the most common of athletic injuries. Rehabilitation for this type of injury includes strengthening of the peroneal muscle group, the main everters of the ankle joint. Loss of strength in this muscle group has been shown to affect the likelihood of reinjury. Muscle strengthening depends on two main areas: muscle activation and muscle fatigue. This study was conducted to determine the

comparative effectiveness between two exercises at activating and fatiguing the peroneal muscle group. 9 Healthy subjects (7 male/2 female, age = 21 ± 2 yrs.) without history of dominant foot or ankle injury were selected from the undergraduate student population. Using Biopac EMG amplifiers and AcqKnowledge Version 3.7.0 software, surface EMG activity of the peroneus longus and brevis was recorded during two open kinetic chain exercises: eversion and eversion with plantarflexion. Prior to each exercise, three maximal voluntary contractions (MVC) of ankle eversion were recorded and averaged. On separate days, subjects performed thirty repetitions of each exercise at a rate of one contraction per second. Resistance was provided using Theraband with an initial force of 5% of subject's body weight. activity was rectified and integrated over a 10-sample window. Each contraction was reported as percentage of the MVC for peak and mean activity. Peak activation was significantly higher for the Peroneus Longus (p = .001) and Brevis (p = .002) during eversion when compared to eversion with plantarflexion. Mean activation was also significantly higher for the Peroneus Longus (p < .001) and Brevis (p = .030) during eversion when compared to eversion with plantarflexion. Increases in peak and mean activation were seen from the first five to the last five repetitions for each exercise. This was seen in both muscles but was statistically insignificant. Both exercises appeared to fatigue the muscle groups. For the given resistance, ankle eversion was superior in activating the peroneal muscle group, compared to ankle eversion and plantarflexion. This finding may suggest that eversion is superior to eversion and plantarflexion in activating and fatiguing the peroneal muscle group.

The Effects Of Lower Extremity Proprioceptive Wobble Board Training On Speed During A Soccer Agility Test

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The performance enhancing and therapeutic effect of proprioception is well documented. Proprioception plays an important role in an athlete's ability to plant, cut, accelerate and decelerate on the playing field or court. Athletes who possess greater levels of proprioception tend to perform better than those with less proprioceptive ability. Additionally, Certified Athletic Trainers have come to rely on proprioceptive motor learning principles for the successful prevention and

rehabilitation of athletic injuries. The purpose of this study was to investigate whether three-weeks of training on a wobble board (i.e., a wooden platform with a half-sphere centered on bottom) would improve an athlete's speed during an agility test. Sixteen male, student-athletes (age = 19.9 ± 3.1 yrs; height = 172.7 ± 17.9 cm; weight = 72.8 ± 11.7 kg) were recruited from a highly successful NCAA Division-III soccer team. After a short warm-up, subjects completed a pretest that consisted of six cones set in straight line on a flat grassy surface 4.6 meters apart. Each athlete was instructed to run through the cones, first weaving through the cones, turning around the last cone, and weaving back to the start/finish line. Upon reaching the start/finish, subjects retrieved a soccer ball and dribbled through the cones as they had done previously without the soccer ball. Times were recorded with a stopwatch. Subjects were randomly divided into two equal groups, an experimental and control. The experimental group underwent proprioceptive training, which consisted of balancing on a wobble board for one minute on each leg, three-times a week, during which subjects were observed by a fourth-year athletic training student to ensure compliance and proper use of the device. The control group had no training. We hypothesized that using the wobble board would improve the soccer player's ability to run and dribble. A two-way ANOVA, repeated measure (time) and one between subjects factor (treatment) was used to access time taken to complete the course. Results indicated a significant main effect for time, such that both groups improved their speed after the pretest ($F_{1,14} = 11.59, P = .004$). However, the interaction between treatment (wobble board) and time was only marginally significant ($F_{1,14} = 3.86, P = .070$). Means and standard deviations were as follows. Pretest experimental group = 18.3 ± 1.3 seconds; Posttest experimental group = 16.4 ± 1.1 seconds; Pretest control group = 17.8 ± 1.0 seconds, Posttest control group = 17.4 ± 1.5 seconds.

The Effects Of Heat And Ice On Muscle Reaction Patterns Following Ankle Perturbation

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Superficial heat and cold applications are two common treatments used in the management of pain and inflammation following ankle trauma. It is possible that decreases in tissue temperature might impair neuromuscular control via a reduction in nerve conduction velocity, while increases in tissue temperature