ABSTRACT

Underwater treadmill (UTM) exercise is emerging as an innovative method of injury rehabilitation, but there has been little research on performance and injury prevention. The low-impact nature of UTM has been suggested to expedite recovery while providing a cardiovascular training effect. Our aim was to test our hypothesis that UTM would decrease overuse symptoms and increase performance in high school cross country runners. 16 subjects (14 ± 2 yr) exercised on a HydroWorx® UTM in small groups for 30-45 minutes, 1-2 times per week for 10 weeks in place of a dry-land practice. Sessions began with a dynamic warm-up and emphasized either recovery or speed. Daily questionnaires regarding injuries, discomfort and performance were administered before dry land and UTM practices. Race times were gathered at the conclusion of the season. We observed a rate of 1.8 injuries/1000 athletic exposures. This injury rate was an improvement over the previous season (2.8/1000) as well as historical controls (17/1000). Significant improvements in average race times from the previous season were seen at 3 races. We cannot say for sure that the benefits we observed were due to the UTM. Future research needs to be done on a larger sample over several seasons.

RESULTS

There were two major injuries resulting in missed practices and meets, resulting in an injury rate of 1.8 per 1,000 athletic exposures. The corresponding rate the previous season was 2.8 injuries per 1,000 exposures. Both these rates are well below the 17/1000 exposures as reported in the literature for high school runners (8).

Though it is difficult to compare race times between seasons, we were able to find improvements in 3 of 10 races, where the runners averaged 1 min 20 sec, 1 min 6 sec, and 1 min 7 sec faster.

DISCUSSION AND CONCLUSIONS

We saw little difference in the injury rate between 2009 and 2010, though the rate was extremely low. Differences might be more apparent in a larger sample of runners. There are several possible reasons for the results in this study. First, there is simply maturation. Our subjects were more physically mature this year, which may explain their fewer injuries and improved running times. Second, they had more time to practice running and their skill may have improved. In addition to these, we would like to think that the UTM experience was also an important contributing factor. Based on the overwhelming appreciation we heard from both runners and coaches, we think the UTM effects are not just physical, but also psychological (e.g., stress reduction, positive affect, kinesthetic awareness) resulting in more knowledgeable and effective overall training habits.

To our knowledge, this study was the first of its kind to assess the use of UTM exercise protocols to improve performance and reduce injury rate in runners. More research on the UTM mode of exercise will hopefully provide greater insight into its effectiveness.

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