Purpose:
This study was conducted to compare whether the lactate threshold (LT), which is when lactic acid starts to build up in the blood stream according to the intensity of exercising, is different when running on land vs. an aquatic treadmill. The study also explored if LT occurs at similar levels of energy expenditure (VO2) and treadmill running speeds.

Methods:
Fifteen males and females free of musculoskeletal injury and recreationally active runners participated in this study. Each participant performed a VO2 peak test using the aquatic treadmill. The requirements each subject met determined the speed of the treadmill. The LT test had different stages that lasted 3 minutes. Each participant was tested on land and water for: 1) running speed at which LT occurred, 2) percentage of VO2 peak at which LT occurred, and 3) absolute blood lactate concentration at which LT occurred.

Results:
The LT point occurred at statistically significantly lower VO2 and HR levels in the water compared with land. Results were similar for running speed, lactate concentration, rating of perceived exertion and respiratory exchange ratio.

Conclusion:
This study shows that aquatic therapy is beneficial to achieve threshold-intensity training while lowering the joint stress that is caused by land running. The lower HR and VO2 response in water may reflect a lower energy requirement due to body weight being partially supported.