

The Influence of Strength, Torque, and Range of Motion on Injury Rates in Distance Runners - A Meta-Analytic Review

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Category: Masters

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ABSTRACT

Running for distance is not exclusive to athletes, but inclusive to everyday individuals as a method of aerobic conditioning, and due to its convenience compared to other methods of exercise. Although there are many well established health benefits, injuries are common with participation, with estimates ranging from 6.8-59 per 1000 hours of running along with a high rate of recurrence. **PURPOSE:** To analyze the effects of performance variables on injury rates in distance runners. **METHODS:** A meta-analysis review was conducted to investigate differences in strength, torque, and range of motion in injured versus uninjured distance runners. Data over injury status, absolute and relative strength (S, RS) absolute and relative torque (T, RT), and range of motion (ROM) were collected from different studies for the investigation. The data was then analyzed to determine whether there were differences between persons who were injured and not injured in the aforementioned variables. Computerized searches were performed to generate citation lists from the period of August 2017 to December 2017 and were limited to studies involving humans who participated in endurance running sport. This developed a retrieval of papers published from 1999 to 2017. Differences between groups were assessed with paired t-test, and effect size (ES) was determined through Cohen d. **RESULTS:** No significant differences were determined between injured and uninjured runners for S ($p=0.26$, $ES=0.42$); RS ($p=0.49$, $ES=0.89$), T ($p=0.37$, $ES=-0.09$), RT ($p=0.11$, $ES=-0.07$), or ROM ($p=0.52$, $ES=0.05$). **CONCLUSION:** Even though there were positive effects in some variables, no statistical significance was observed. There are a very small number of studies in this area, making conclusive statements difficult. Additional investigations in this area need to be performed.