Effects of extended time of stretch on Anaerobic exercise

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Abstract

Stretching is commonly used to prepare the body for work and protect the exercising muscles from sudden exertion. Ballistic, dynamic, active, passive, static, isometric and proprioceptive neuromuscular facilitation stretching are the various ways of stretching that hold certain values which are beneficial for the body yet still pose draw backs in the nature of the movements. Static and dynamic stretching are more commonly used in athletics since they still prepare the body for work yet "dynamic stretching performed prior to vertical jumps can result in improvements in performance" (Vanderka 2011). Static stretching has long been the mode of choice for stretching with mixed results about the effectiveness as well as the most beneficial application.

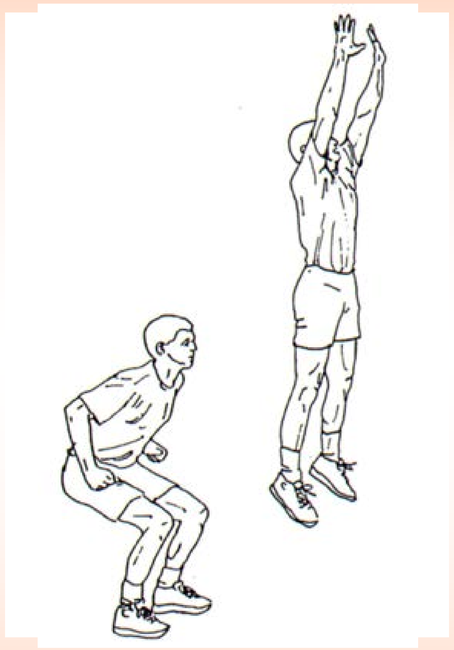
Purpose

The purpose of the study was to find the effects of extended stretching on anaerobic exercise using static stretches.

Methods

10 fit male subjects age s 22 ± 1.5 years, weight 69 ± 6.3 kg, and height 164.9 ± 8.7 cm. Subjects performed two Wingate tests and two countermovement vertical jumps using a force plate. The first day the subjects jumped and participated in a Wingate test so base values of peak power, from the bike and force plate, jump height, and jump velocity were obtained. The second day the subjects stretched their gastrocnemius, hamstrings and quadriceps for 90 seconds then jumped using the force plate and participated in a second Wingate test. Trials between the normal jump and the stretched jumped were analyzed using a correlation and a t test ($p \leq 0.05$)

Methods (cont'd)



Results

Jump height, peak power, from the bike and force plate, and the velocity of the contraction were extracted from 10 subjects. After stretching, jump height, peak power and velocity of the contraction were slightly reduced. Average jump height before stretching was 31.8 ± 11.4 cm, and after stretching 28.8 ± 9.5 cm. According to the force plate peak power was 3723 ± 966 W before stretching and after stretching 3553 ± 871 cm. With the Wingate tests peak power was 494.8 ± 116.9 W before stretching and after stretching peak power was 476.3 ± 103.7 W. Jump velocity was measured by the force plate as well, before stretching the average velocity was 2.60 ± 0.55 m/s and after stretching the velocity decreased to 2.52 ± 0.52 m/s.

Results (cont'd)

Analysis of normal jump height to stretched (r = 0.93; p=0.058
Analysis of peak power - force plate (r = 0.96; p= 0.076)
Analysis of peak power - Wingate (r = 0.96; p=0.11)
Analysis of vertical jump velocity (r = 0.92; p=0.27)

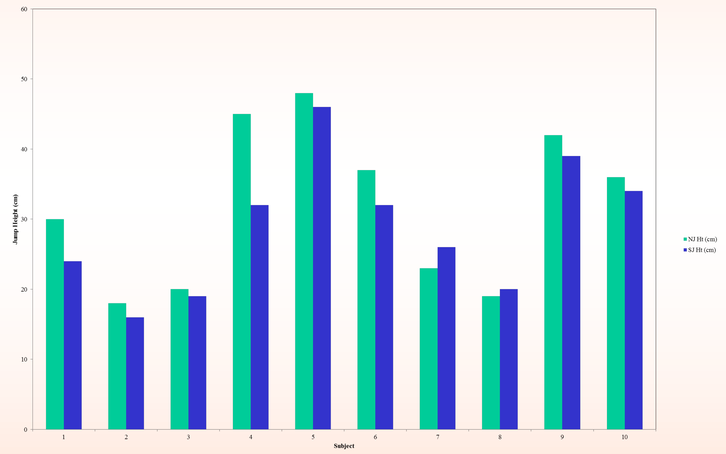


Figure 1: Comparison of Jump Height Between Two Trials

Conclusions

There was a trend towards significance between the normal and stretched jump (p=0.058), however, this finding was not supported by the other analyses for peak power (p=0.07) and jump velocity (p=0.27). In this study, stretching seemed to have some effect on the jump height but not on peak power and jump velocity.