

Effect of compressive running socks on the physiological performance parameters in ambitious amateur runners



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Introduction

The positive effect of compressive running socks upon the peripheral blood circulation and the venous backpressure of the muscles is sufficiently known. To what degree this improved blood circulation is concurrent with a performance improvement in endurance sports has not yet been investigated.

For this reason this study pursued the question of the effect of compressive cep® running socks (CEP, Himmelkron, Germany) on the physical (time under load, work) and physiological parameters in "ambitious amateur runners".

Methodology

Random sample

A total of 21 "amateur runners" with a training frequency of 2-5 training units per week were included. The athletes completed a test with "cep® running socks" and a test with their usual socks in a randomly arranged sequence with the gap between the tests being > 48 h. Table 1 illustrates the start conditions for our athletes.

Age [years]	39.3 ± 10.7	25 - 60
Height [cm]	178.5 ± 4.8	170 - 188
Weight [kg]	75.4 ± 7.4	62.4 - 90.0
Running distance [km]	40.1 ± 17	20 - 80
Running experience [y.]	16.0 ± 9.4	4 - 35
Best time 10,000 m [min]	40:36 ± 6:29	34:25 - 61
Best t. marathon [h] ⁿ⁼¹²	3:11 ± 0:13	2:49 - 3:32
Running, ann. expense [€]	434 ± 325	40 - 1500

Intervention:

Staged running test (running belt) until subjective exhaustion: 5 min duration per stage; 1 km/h increase; start individually at 9-11 km/h without gradient; focussed test duration ≥ 35 min.

Spiroergometry:

AMV, VO₂, VCO₂ and corresponding data via Oxycon mobile. "Breath by breath".

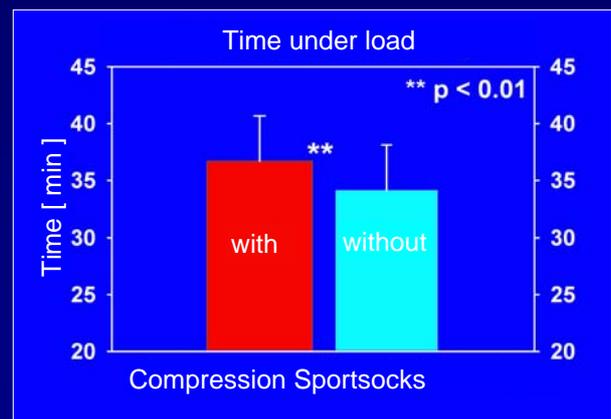
Lactate performance diagnosis:

Blood sampling at the finger tip. Calculation of the blood lactate level using Lactat-Scout. Threshold determination according to Dickhuth (min. + 0.5 mmol; min. +1.5 mmol).

Calculation of physical values

Work: Performance x time. Performance per stage (via automatic output of the spirometric program) was summed up for the stages.

Results



The time under load (= running time) in the staged test was approx 5% higher with compressive cep® running socks, the work achieved as the net criterion of the performance approx. 6% higher than without compressive running socks (cep®).

The velocities at the "aerobic" (min. + 0.5 mmol) and aerobic/anaerobic (min. + 1.5 mmol lactate) threshold were also significantly higher (0.20 - 0.25 km/h in each case).

The results of the study indicated that the maximal consumption of oxygen (VO₂max) tends to increase by 3%.

In summary a higher velocity could be implemented with compressive running socks on the maximum and sub-maximum metabolic load levels, definitively confirming the question about a "performance improvement".