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Effect of Pole Weight on Nordic Walking

Authors : Takeshi Sato, Mizuki Nakajima, Macky Kato, Shoji Igawa

Abstract : The purpose of study was to investigate the effect of varying pole weights on energy expenditure, upper limb and lower limb muscle activity as Electromyogram during Nordic walking (NW). Four healthy men [age = 22.5 (±1.0) years, body mass = 61.4 (±3.6) kg, height = 170.3 (±4.3) cm] and three healthy women [age = 22.7 (±2.9) years, body mass = 53.0 (±1.7) kg, height = 156.7 (±4.5) cm] participated in the experiments after informed consent. Seven healthy subjects were tested on the treadmill, walking, walking (W) with Nordic Poles (NW) and walking with 1kg weight Nordic Poles (NW+1). Walking speed was 6 km per hours in all trials. Eight EMG activities were recorded by bipolar surface methods in biceps brachii, triceps brachii, trapezius, deltoideus, tibialis anterior, medial gastrocnemius, rectus femoris and biceps femoris muscles. And heart rate (HR), oxygen uptake (VO₂), and rate of perceived exertion (RPE) were measured. The level of significance was set at a = 0.05, with p < 0.05 regarded as statistically significant. Our results confirmed that use of NW poles increased HR at a given upper arm muscle activity but decreased lower limb EMGs in comparison with W. Moreover NW was able to increase more step lengths with hip joint extension during NW rather than W. Also, EMG revealed higher activation of upper limb for almost all NW and 1kgNW tests plus added masses compared to W (p < 0.05). Therefore, it was thought either of NW and 1kgNW were to have benefit as a physical exercise for safe, feasible, and readily training for a wide range of aged people in the quality of daily life. However, there was no significant effected in leg muscles activity by using 1kgNW except for upper arm muscle activity during Nordic pole walking.

Keywords : Nordic walking, electromyogram, heart rate, RPE
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