**Effects of load carriage and poles use on walking velocity at field tracks**

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Introduction

The use of the walking poles has increased, however de literature still does not a consensus about their benefits. It as also been reported that the load carriage with poles use, spite of reducing the mechanical load of the lower limb may cause higher fatigue. The purpose of this study was to determine the effects of poles and load carriage on the walking velocity and on rate of perceived exertion (RPE). The velocity was examined for four walking condition: non-poles and non-load (W), with poles and non-load (WP), non-poles and with load (WL), with poles and with load (WLP).

Methods

Twenty six healthy masculine volunteers walked at a self-selected pace during a pedestrian field track with 821 m long on level terrain (mean±SD, age 23,30 ± 2,69 years; body weight 76,96 ± 12,19 Kg; height 176,25 ± 5,70 cm; body fat percentage 14,69 ± 5,89%). The subjects completed each trail in a randomized order after return to the metabolic rest values between trails. The rest heart rate (HR) and oxygen consumption (VO2) were recorded by a portable telemetric system. Rating of perceived exertion (RPE) was measured at the end of each trial by the modified Borg scale (1-10)[1]. The weight carriage was 25% of the subject’s body mass, in a backpack with internal frame, sternum strap, hip belt and load lifters adjusted for each subject as well the telemetric poles.

Results

Significantly differences were not found in RPE for comparisons M *vs* MP and ML *vs* MLP. Walking speed shows a significantly decrease ( = 0,05, IC 95% 0,01 to 0,1, *P*≤ 0,05) between M *vs* MP.



Conclusions

The results indicate that the use of poles doesn't increase the perceptive demands (RPE). The use of poles at load carriage didn’t alter RPE and the walking speed. These results indicate that the use of poles may point as a strategy to reduce perceptions of physical exertion associated to the load carriage.

References

ACSM (2006). Guidelines for Exercise Testing and Prescription. Baltimore: Williams & Wilkins; p.368 - 6th.ed.

Deaton, M., Kolvalcik, P., Saunders, M. (2004). Metabolic responses during Appalachian Trail backpacking with and without trekking poles. American College of Sports Medicine, Indianapolis.

Jacobson, B. H., Wright, T., Dugan, B. (2000). Load carriage energy expenditure with and without hiking poles during inclined walking. International Journal of Sports Medicine, 21(5), 356-359.

Knight, C., Caldwell, G. (2000). Muscular and metabolic cost of uphill backpacking: are hiking poles beneficial? Medicine e Science in Sports e Exercise, 32(12), 2093-2101.

Sklar, J., DeVoe, D., Gotshall, R. (2003). Metabolic effects of using bilateral trekking poles whilst hiking. Journal of Human Movement Studies, 44, 73-185.