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Title

Effects of rocker –bottom shoe on energy expenditure during walking: A systematic review

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Summary

This study stated that the conflicting results of previous studies were related to the multifactorial of the nature of energy consumption. Indeed many factors would influence on energy consumption during walking with rocker-bottom shoe, such as mass, hardness, design of rocker shoe, speed of walking

Introduction

Rocker bottom shoes are the most common prescribed external shoe modifications. The biomechanical effects of rocker soles include restoring lost motion in the foot and ankle and off-loading plantar pressure on some parts of the foot. Therefore, rocker shoes are used frequently in rehabilitation to treat disorders of the lower limb in diseases like diabetes. most studies have examined the effect of rocker bottom shoes on the kinetic and kinematic parameters of gait, plantar pressure, and electrical activity of lower limb muscles. Few studies have evaluated the effects of rocker bottom shoe on energy expenditure during gait and conflicting results have been reported and also to our knowledge no literature review has ever addressed the effectiveness of rocker bottom shoe on energy expenditure during walking. Therefore the aim of this study was to review previous studies about the efficacy of rocker bottom shoe on energy expenditure during walking.

Methods

A review of intervention studies including the following words in the title/abstract: rocker bottom shoe, energy expenditure, energy consumption, heart rate and related to gait. Databases searched included PubMed, ISI Web of Knowledge, Scopus, and Google Scholar. 7 articles were selected for final evaluation. The procedure was followed using the Population intervention

outcome measurement (PICO) methods and the Preferred Reporting Items for Systematic Reviews.

Results

Analyzing the data of 7 articles indicated that, 4 of 7 articles demonstrated that rocker-bottom shoe could increase energy consumption while walking. In 1 article, authors stated that wearing rocker bottom shoe resulted in reduction of energy expenditure during walking. According to the results of 2 articles, rocker bottom shoe could not change the energy consumption value during walking.

Conclusion

This study demonstrated that the conflicting results by previous studies was due to the fact that many factors would influence on energy consumption during walking with rocker-bottom shoe, such as mass, hardness, design of rocker shoe, speed of walking and etc. Therefore in the future studies the effects of these factors should consider on energy consumption. Also, further studies providing valid and high-quality evidence are needed to support better-informed clinical practice in the use of rocker-bottom shoe in different subjects and patients.

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