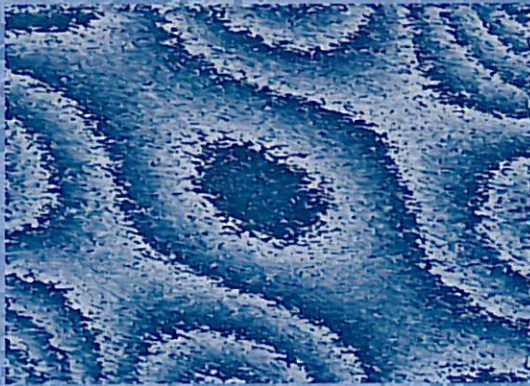


EXPERIMENTAL MECHANICS

New Trends and Perspectives

J.F. Silva Gomes, Mário A.P. Vaz
Editors



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(NEW TRENDS AND PERSPECTIVES)

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ANALYSIS OF THE KINEMATICS OF GAIT OF YOUNG ADULT FEMALE CARRYING A COMPUTER BAG WITH SINGLE HANDLE

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ABSTRACT

The aim of this study is to assess postural changes in young female adults carrying a personal computer and some auxiliary material in a shoulder bag. Images have been recorded in the frontal and sagittal planes. After recording, the anatomical landmarks were manually digitized with appropriate software. Analyzing the data and comparing the two situations - with and without carrying a load can be registered significant differences in posture and normal gait.

INTRODUCTION

Having as objective the kinematic analyze of young adult females gait, which are in higher education institutions (18-23 years old), carrying a shoulder bag in a single strap with personal computer and containing school materials support. It appears that a large number of persons, for professional reasons or mere pleasure, students, managers, business person, salesman, among others, carry non-negligible weights (Gonçalves, Rocha, Queijo, Barbosa, & Juan, 2011).



Fig. 1-Recording image in the sagittal plane

The fact of such people tend to carry so often the computer and other material, with relative weights not negligible, when traveling between home and workplace, as well as between spaces in the workplace leads to the need of identification of factors predisposing to postural changes and subsequent occurrences of acute and chronic injuries to be fundamental (Rocha & Barbosa, 2008).

For this study each female student was instructed to walk naturally with a comfortable speed, making several preliminary passes for training, in a straight line with and without the shoulder bag. Shoulder bag contained the laptop computer and the remaining mass corresponded to books, computer charger and other accessories and/or educational materials. The loaded shoulder bag mass used was 10% of body mass once it has been verified some postural instability with these values, in preliminary study (Gonçalves, Rocha, Queijo, Barbosa, & Juan, 2011).

All procedures were filmed in the frontal and sagittal planes and processed with specific software for analysis of human movement. Tridimensional analysis was not performed. Kinematic analysis was made for a complete cycle, under loaded and unloaded conditions. We have evaluated the general cycle's parameters, angular and linear kinematics parameters.

RESULTS AND CONCLUSIONS

As conclusion, it can be pointed out that postural differences between the gait with load on shoulder and walking unloaded are significant. The gait with load was altered on contrast to the normal gait. Especially interesting is to compare the variation of Hip position when the gait takes place with or without load.

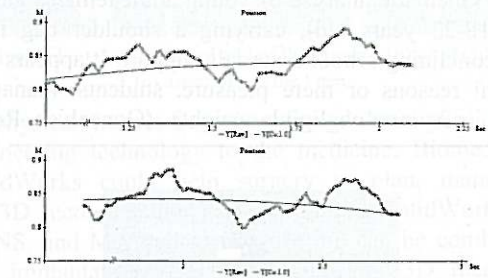


Fig. 2 - Position of the right hip with load (A) and right hip with no load (B). Raw Signal

The daily use of bag with laptop and other material having a significant mass and subsequent transport between home and workplace and during work supported by a single shoulder is a precursor of musculoskeletal disorders.

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