Baby carrying can affect active neck range of motion: a study of 2 designs

BB. Zietsman, Al. Heusch, A.Gilder-Wright, L. McGovern, P. Solly, PW. McCarthy
University of South Wales (UK)

Abstract

The aim of the study was to assess the effect of carrying a baby, in a sling, on the parents active cervical spine range of motion (ACROM), comparing two carrier designs.

Results of the study showed a decrease in ACROM in extension and total flexion-extension in those participants using the single shoulder carrier.

Introduction

Baby-wearing is the act of carrying a baby or child in a sling/carrier. In recent years it has gained somewhat of a resurgence and has become an increasingly popular way of carrying children in Western society. The rationale underlying the popularity of this mode of baby-wearing can vary from factors such as convenience to more complex psychosocial issues related to ‘mother-child bonding’. Research has suggested that baby wearing results in happier healthier babies[1] and more confident, loving care givers[2]. However, are there any consequences to the already stressed and not necessarily structurally capable parents in relation to the rigors of baby-wearing? As there are various designs of carrier available, is there one which has less impact on the biomechanics of the spine; especially in relation to shoulder harnesses and cervical spine function?

Methodology

• 18 Final year WIOC students volunteered for the study.
• A cervical range of motion device [5-8], was used to measure ACROM (Figure 1). The protocol used in this study is the same as that described in Lark and McCarthy 2007 [3].

Exclusion criteria included current neck pain or trauma, previous surgery or serious pathology.

• Following initial measurements, the volunteers were randomly allocated either a baby carrier (Figure 2) or to be a control on that day. Those with a carrier included a specially designed “baby” mannequin (Figure 4) with a mass of 11kgs; dimensions based on the population average statistics for a baby of 1yr of age[5].
• Each volunteer was encouraged to continue with their daily activities (in and around the institute) to then return after 2 hours of wearing the carrier. On return the carrier was removed and measurements repeated (without any warm-up phase; to determine the effect of protective muscle tone generated by the carrying period).
• Ethical approval was granted by The Faculty of Health Science and Sport's Ethics Committee, University of Glamorgan, written informed consent was obtained.

Results

The data was analysed using SPSS (v19) and was found to be normally distributed (Shapiro-Wilk’s), therefore paired T-tests and Cohen’s d coefficient of effect size were used to compare the effect of two carriers.

Following 2 hours of wearing the single shoulder carrier, subjects appeared to have a significant decrease in extension and total flexion-extension ACROM. In contrast, no significant change was seen in either flexion or extension for the control group or following wearing of the double shoulder harness carrier (Table 1). There was no significant difference in flexion extension ratio for all groups.

Conclusions

Carrying an average 1 year old child using a single shoulder baby carrier can lead to an accelerated rate of change in neck ACROM in extension, whereas the use of a carrier that displaces the mass over both shoulders does not appear to lead to such a change.

Although these results may have an implication to those with generally healthy bodies who are physically active, it is highly likely that choice of carrier in those with extant cervical spine dysfunction might lead to exacerbation of the problems.

References


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