THE COMPARISON OF THREE TYPES OF SEATS' INFLUENCE ON THE VIBRATION TRANSFERRED TO DRIVER'S BODY

[1] Siamak Khorramymehr, [1]Shirin Manafi
[1]Islamic Azad University, science and research branch
Email: khorramymehr@biomechanics.ir

INTRODUCTION

Skeletomuscular disorders are one of the most common diseases between people whose job is driving. One of the important causes of this would be the transferred vibration to the whole driver's body. Vibration could also be the cause of other events such as cardiovascular, respiratory, digestive or nervous illnesses. One of the methods to control vibration is to use a tool that can function as an isolation to decrease the transferring vibration. In this paper, we tested 3 different seats including airy, spongy and watery seats to reduce the vibration to zero. Studying the efficiency of these seats in controlling the transferring vibration to body is the aim of this project.

METHODS

The rate of vibration transferred to the body of 32 taxi drivers in Tehran was measured while driving in 2 conditions, before and after using the special seats.
The parameters concerning the vibration include *Lmax, Aeq* and *Pmax* which are in three different directions. The average of measured parameters in both conditions were compared using *SPSS* software and *Paired Sample T-Test*.
Vibration signal registrated by a piezoeletric accelerometer (Model 4374L,Bruel & Kjaer Factory) and relative amplifie Circuit series include of amplifier Tlo62, Transformer ADC0804 and Buffer LS125A designed for transforming output signal from amplifier of accelerometers by printer port. This set of circuit after designing and testing and this circuit with amplifier and feeding resources specialty for accelerometer were placed in a computer case The interpreter software of this set is written in LabVIEW 7/1 program.
The program has drawn simultaneously acceleration graph for accelerometer and by numerical integration from them shows and calculates velocity and replacement graphs (Figure1).

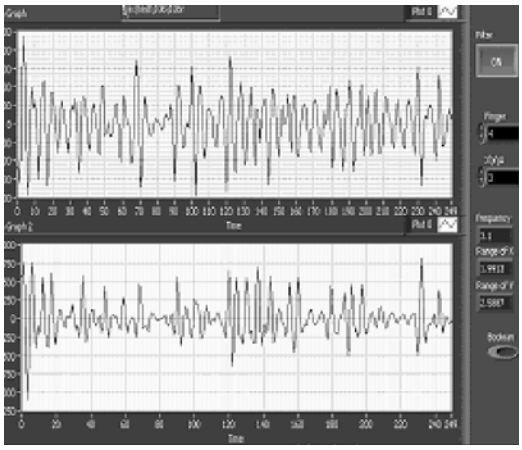

Figure1: The designed monitor in software

RESULTS AND DISCUSSION

The results of this comparison are shown in table 1.
It is shown that airy seat has little impact on reducing vibration. But this reduction is not as sufficient as to put the vibration in standard limits. Watery and spongy seats have also similar influence in controlling vibration and using them is recommended.

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Table 1: the comparison of 3 seats

		Befor	**After**
Airy seat	Pmax	30.47	30.37
	Lmax	30.42	30.35
	Aeq	30.44	30.36
Spongy seat	Pmax	30.47	30.10
	Lmax	30.42	30.01
	Aeq	30.44	30.03
watery seat	Pmax	30.47	30.12
	Lmax	30.42	30.03
	Aeq	30.44	30.05