

# Music and Medicine: postural and vestibular dysfunctions in conservatory students

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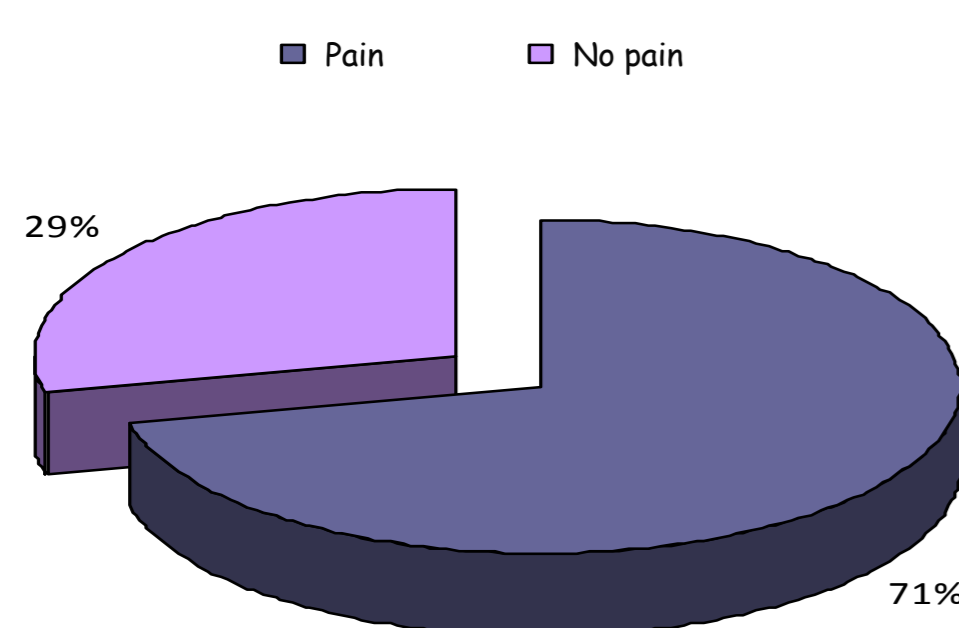
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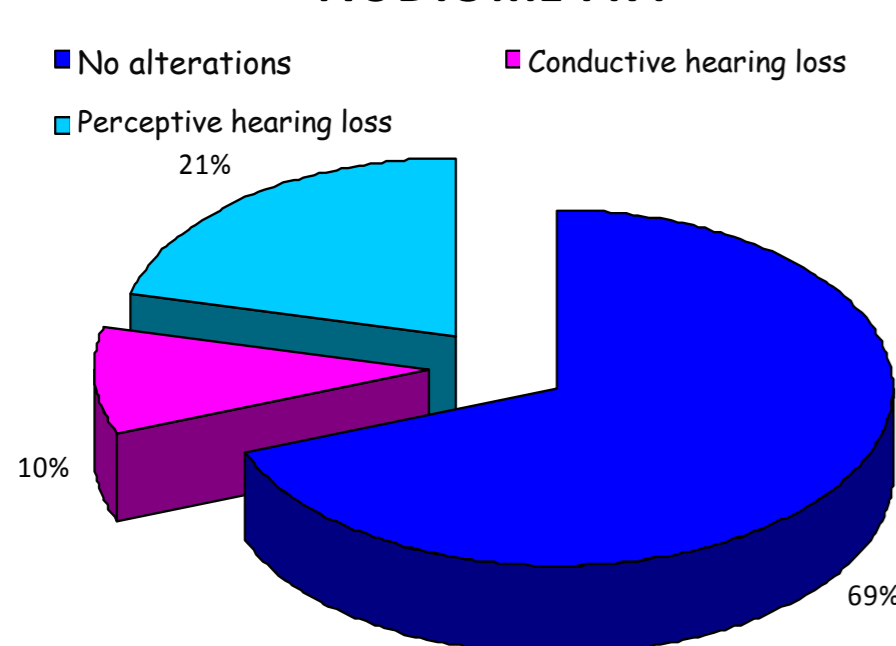
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**Aims:** Postural dysfunctions are among the causes of many musicians disorders (chronic pain, peripheral nerves disorders, focal dystonia), mainly related to overuse. Recent neurophysiological acquisitions affirm the key role of vestibular input as intrinsic reference in the regulation of postural control in order to achieve maximum efficiency with minimum effort, in static and even more in dynamic. Could vestibular dysfunction be one of the causes of overuse syndrome in instrumental musicians?

**PAIN IN ADULT MUSICIANS,  
WHO PLAY MORE THAN 14  
HOURS A WEEK FROM 10  
YEARS**



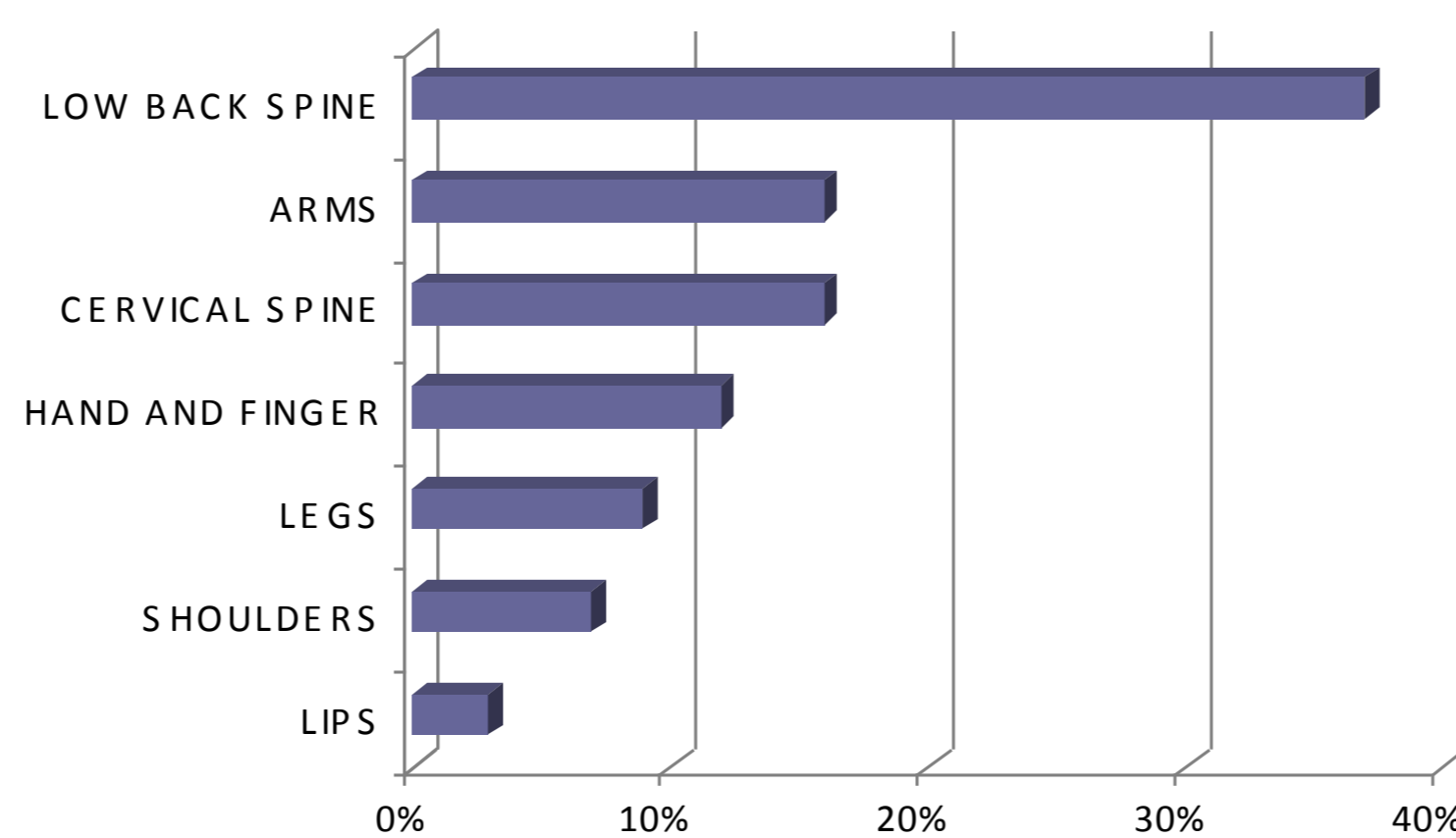
**AUDIOMETRY**



## Materials and Methods:

71 musicians of F. Venezia Conservatoire in Rovigo have been chosen. Everyone underwent an audiometry and a physical examination, and filled out a questionnaire about auditory disorders and chronic pain. Singers and woodwind players also got a ENT examination and completed a VFHI questionnaire. Then, 17 advanced courses musicians affected by overuse syndrome and without vestibular symptoms underwent a static and dynamic posturography.

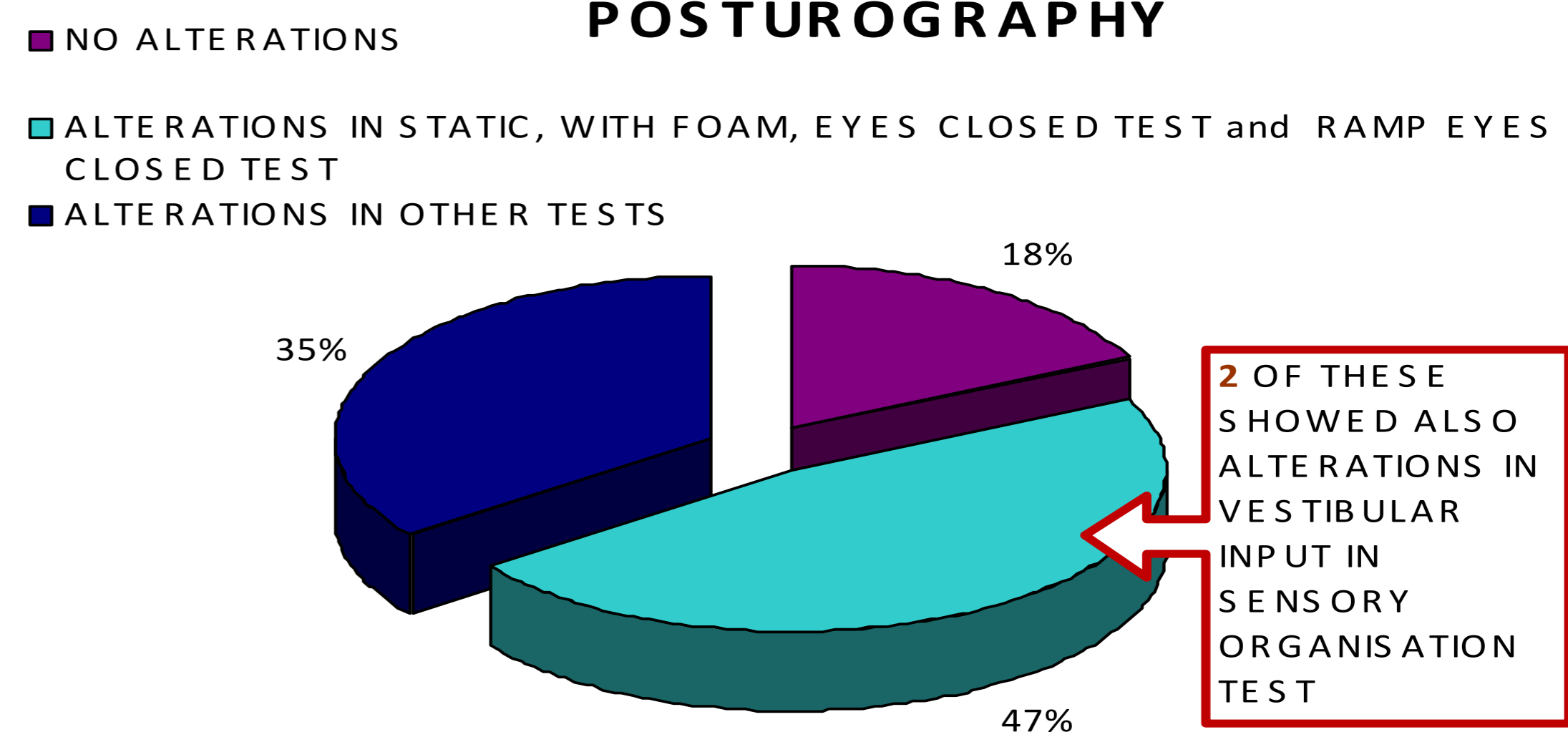
**PAIN LOCATION**



**Results:** 56% of musicians suffered from pain, especially on back (40%), hands and fingers (16%) and upper limbs (12%). 50% of musicians showed postural dysfunction to the physical evaluation. 28% of musicians showed alterations at the audiometry testing. As for posturography, 14/17 subjects (82%) showed one or more alterations, 8/17 (47%) in those conditions more challenging for the vestibular system (eyes closed on foam and/or eyes closed on mobile platform).

**Discussion:** Prevalence of pain and postural dysfunctions in this sample of musicians grows with age and level of study: younger students have no pain or alterations, like students who started playing only recently. Adult students (age >18, practice about 14 hours a week from 10 years) had a prevalence of PRMD up to 71%. Only 3 students (4%) have already done an audiometry even if 17% have audiological problems at the questionnaire. The hearing tests show that 28% have a mild hearing loss. All the subjects who performed posturography suffered from overuse syndrome and a noticeable percentage of them show posturographics patterns possibly related to vestibular dysfunction or altered central integration of even correct vestibular inputs.

**GENERAL RESULTS BETWEEN THE 17  
PATIENTS WHO PERFORMED  
POSTUROGRAPHY**



**Conclusion:** Results of this study are consistent with the data in the literature about PRMD. Searching for risk factors and early signs of PRMD seems crucial as the need of a prevention program, especially during the academical training. Furthermore, coming from neurophysiological assumptions and these preliminary data, in our opinion there is a need of further exploration of the role of the vestibular system in the pathophysiology of PRMD for prevention, treatment and performance improvement issues.

## References:

Goodworth AD et al, J Neurophysiol 2010; 103:1978-87  
Ramella M et al, Med Probl Perform Art 2014; 29(1):19-22 Norris RN.  
The Musicians Survival Manual; ICSOM, 1993