

Development and Psychometric Evaluation of a Self-report Instrument to Measure Musculoskeletal Pain in Professional Orchestra Musicians In Scotland



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Introduction

Many epidemiological surveys on playing-related musculoskeletal disorders (PRMDs) have been carried out among professional musicians, but none evaluated or confirmed the psychometric properties of the self-report instruments that were used.^{1,2}

Aims

The aim of the study was to develop and validate a self-report instrument to measure musculoskeletal (MSK) pain, and pain interference in terms of function and psychosocial constructs, for a population of professional orchestra musicians. A subsidiary aim was to gather data on prevalence of PRMDs.

Methods

- 183 professional orchestra musicians were eligible to participate in the study.
- Development of the **Musculoskeletal Pain Intensity and Interference Questionnaire for Musicians (MPIIQM)** involved the selection and modification of the most appropriate instruments measuring MSK pain.
- Guidelines from the Consensus-based standards for the selection of health measurement instruments (COSMIN) checklist were followed.³
- Psychometric evaluation was then carried out, focusing on face and content validity,⁴ construct validity using exploratory factor analysis (EFA), internal consistency, and test-retest reliability.^{5,6}

Results

- The response rate from orchestra musicians was 55% (n = 101).
- Point prevalence of PRMDs was 36.6% (n = 37). The percentage of missing scores was very low (2.7%).
- Face and content validity were ascertained by the expert panels. Content validity ratios (CVR) were calculated for each item.
- EFA revealed that the MPIIQM had a strong and stable two-factor structure, with nine retained items explaining 71.3% of the variance in the data set. (Table 1).
- High internal consistency was achieved for each subscale (Cronbach's alpha = 0.91).
- Substantial test-retest reliability for the pain intensity items (range 0.78 – 0.82), and moderate to substantial test-retest reliability for the pain interference items (range 0.56 – 0.76) were obtained.

Table 1 Factor loadings for the 9 core items of the MPIIQM following EFA with principal axis factoring (oblique rotation)

Questionnaire Item	Factor 1 Pain Intensity	Factor 2 Pain Interference
Worst pain	0.830	
Least pain	0.814	
Average pain	0.979	
Pain right now	0.783	
Mood		0.848
Enjoyment of life		0.818
Using your usual technique		0.797
Playing because of symptoms		0.695
Playing as well as you would like		0.895

Conclusions & Recommendations

- The MPIIQM is a valid and reliable self-report instrument for the measurement of MSK pain and pain interference in a population of professional orchestra musicians.
- It is compliant with the principles set out by the World Health Organisation in the international classification of functioning, disability and health (ICF).⁷
- Due to its evaluative properties,⁸ this instrument could also be used as a screening or injury surveillance tool within the context of health and safety in professional orchestras.

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Further Information

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