1 Abstract

Introduction

Among numerous scientific publications particular attention is paid to the possibility of the relationship between regular and long-term play of a musical instrument and the appearance of changes in the musculoskeletal system. Tissue imbalance resulting from the assumption of a forced position, often inconsistent with physiological position, repetition of activities that constant involve the same structures and numerous overloads contribute to the formation of dysfunction of the spine and shoulder joints.

Objective

The aim of the study was to analyze the influence of playing woodwind instruments on the example of bassoon and saxophone on the functions of the shoulder joint among musicians.

Method and materials

The study material consisted of 23 students in the bassoon or saxophone class, 23 professional musicians playing the bassoon or saxophone, and 25 students of physiotherapy. The study was carried out on the basis of a questionnaire and functional examination of each participant. The questionnaire consisted of 24 questions concerning the exact location of pain in the area of the upper limb and spine, occurrence of dysfunctions in everyday life, symptoms accompanying pain and daily physical activity. Musicians were also asked about daily exercises on a musical instrument - the age of starting to play a musical instrument, playing time and breaks. Bilateral functional examination of the shoulder joints included: muscle strength using the IDO electronic dynamometer, range of motion using the goniometer, pain assessment according to the VAS Visual Analogue Scale and functional tests concerning the neck, shoulder, elbow and wrist area. Resistance muscle tests which included muscles responsible for joint mobility in every plane, were also used.

Results

The vast majority of the surveyed instrumentalists experienced pain in the musculoskeletal system as a result of playing the bassoon or saxophone. First health problems appeared in professional musicians later than among young musicians. The areas most frequently affected by pain were reported to be: the right shoulder joint (39.13% in young instrumentalists and 30.43% in professional musicians) and the left shoulder joint (30.43% of respondents in each group of musicians). 76.47% of young and 77.78% of mature instrumentalists complained of additional symptoms such as tingling and numbness in the distal parts of the upper limbs. The highest values of the strength of muscles responsible for the function of the shoulder joint were recorded among young musicians for the internal rotation movement on the right side (Me = 5.03), while for professional musicians, it was the internal rotation movement of the left joint (Me = 8.13). Young musicians were also characterized by a statistically significantly lower range of mobility of internal rotation of the right shoulder joint compared to the control group ($p = 0.014$). A statistically significant correlation was also found between the profession of a musician and the positive result of the Neer test ($p = 0.015$) and the speed test ($p < 0.05$).

Conclusions

1. The shoulder joint, apart from the ailments of the cervical and lumbosacral spine, is one of the most sensitive areas of the body among bassoonists and saxophonists.
2. Playing the bassoon or saxophone from an early age reduces muscle strength and the range of mobility of the shoulder joint.
3. Bassoonists and saxophonists overload the muscular system, which is responsible for the stabilization of the shoulder joint and the range of motion in the joint.
4. There are no differences in the strength of muscles responsible for the movement of the right and left shoulder joints.
5. The wrist and interphalangeal joints of the right hand far more pain and dysfunction to bassoonists and saxophonists than to the opposite limb.
6. The low awareness of instrumentalists regarding health care has not changed over the years.

Keywords: shoulder joint, woodwind musicians, bassoon, saxophone, instrumental musicians.