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# Occurrence and Trends of Musculoskeletal Pain Among Ski Instructors

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# Occurrence and Trends of Musculoskeletal Pain Among Ski Instructors

By Denis Čaušević, Erol Kovačević, Semir Mašić, Siniša Kovač, Seth Spicer, Ahmed Gawash

## Abstract

- Occupational health and injury prevention research can mitigate MSD in the workplace
- The study aimed to determine how work demands affect the musculoskeletal health of ski instructors
- 87 ski instructors in Bosnia and Herzegovina participated in the cross-sectional study
- MSDs were most common in the lower back and knees of female employees
- Statistically significant differences in MSD were found between genders in the neck, shoulders, upper back, one or both knees, and ankle joint
- Future research or injury prevention programs could benefit ski instructors with MSDs.

## Introduction

- Skiing is a very specific and demanding movement activity
- The process of ski instruction is composed of motor learning principles and hands-on work by the teacher
- The basic goal of occupational kinesiology is to contribute to the preservation and the improvement of human health in the work process
- Exogenous factors such as the time spent on skis, the number of repetitions of movements, climatic conditions, and the choice of ski equipment can cause musculoskeletal disorders
- The main goal of this study is to determine the prevalence of symptoms of musculoskeletal disorders among ski instructors
- Insights gained from this study may elucidate possible target areas for future workplace injury preventative programs.

## Results

- The research included 87 instructors
- 65 of the instructors were men (74.71%) and 22 were women (25.29%)
- The average age of the treated group of ski instructors in Bosnia and Herzegovina was 34.61 years
- The average length of service as instructors was 6.52 years
- Instructors spent an average of 61.21 days (5.72 hours per day) on the mountain doing their instructor work in the previous season
- Prevalence of symptoms of musculoskeletal disorders in the previous season:
  - Neck: 13.8%
  - Shoulders: 12.6%
  - Elbows: 4.6%
  - Wrist: 9.2%
  - Upper back: 10.3%
  - Lower back: 46.0%
  - One or both hips: 9.2%
  - One or both knees: 29.9%
  - Ankle: 9.2%

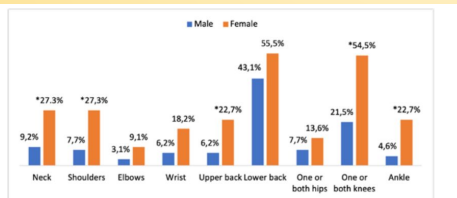


Figure 1. Percentage difference between MSD among male and female ski instructors. \*\*\* Indicates a statistically significant difference.

## Discussion

- The incidence of musculoskeletal disorders for certain body segments among ski instructors was between 9.2% and 46% in the past ski season.
- Low back pain at 46% is the biggest problem among ski instructors
- In 2013, 8% of the total EU population reported some form of musculoskeletal problems, while 55% of that population was absent from work because of them.
- 60% of the total percentage of reported diseases caused or related to work were related to musculoskeletal disorders and most often MSD was associated with the back.
- The next most common problem among ski instructors is pain in one or both knees (29.9%).
- There is a statistically significant difference in the incidence of knee pain in women (54.5%) compared to men (21.5%).
- In 5 out of 9 body regions (neck, shoulders, upper back, knee and ankle), women have a significantly higher frequency of painful conditions.

Table 2. Musculoskeletal disorders among ski instructors

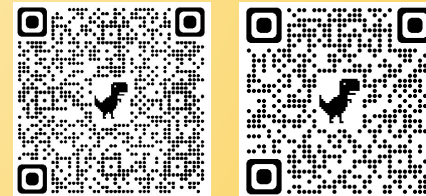
MSD	Total		Male		Female		T-test	
	n	%	n	%	n	%		
Neck	No	75	86.2	59	90.8	16	72.7	.054*
	Yes	12	13.8	6	9.2	6	27.3	
Shoulders	No	76	87.4	60	92.3	16	72.7	.017*
	Yes	11	12.6	5	7.7	6	27.3	
Elbows	No	83	95.4	65	96.9	20	90.9	.249
	Yes	4	4.6	2	3.1	2	9.1	
Wrist joint	No	79	90.8	61	95.8	18	81.8	.094
	Yes	8	9.2	4	6.2	4	18.2	
Upper back	No	78	89.7	61	95.8	17	77.3	.027*
	Yes	9	10.3	4	6.2	5	22.7	
Lower back	No	47	54.0	37	56.9	10	45.5	.357
	Yes	40	46.0	28	43.1	12	55.5	
One or both hips	No	79	90.8	60	92.3	19	86.4	.410
	Yes	8	9.2	5	7.7	3	13.6	
One or both knees	No	61	70.1	51	78.5	10	45.5	.005*
	Yes	26	29.9	14	21.5	12	54.5	
Ankle joint	No	79	90.8	62	95.4	17	77.3	.011*
	Yes	8	9.2	5	4.6	5	22.7	

Legend: MSD - musculoskeletal disorders; \* - p < 0.05

## Conclusion

- The incidence of musculoskeletal disorders among ski instructors ranged from 9.2% to 46% in the past ski season.
- Lower back pain was the most common problem reported by both sexes.
- Lumbar pain syndrome is a prevalent health problem and the most common cause of absenteeism from work.
- Quality of work is important for occupational safety of ski instructors, especially when performing daily work tasks such as lifting clients and demonstrating techniques.
- Identifying primary risk factors for ski instructors' professional activities can prevent or prepare for painful conditions in the musculoskeletal system.
- Women ski instructors had a statistically significant higher frequency of painful musculoskeletal disorders compared to men.
- Women are exposed to a greater risk of injury in training and competition because of anthropological characteristics, such as a wider pelvis, less developed strength, greater mobility in the joints, etc.

## References & ResearchGate



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