

Lifestyle Behaviours and Future Healthcare Utilisation for Musculoskeletal Pain in Young Adults: A Cohort Study of Norwegian University Students With Three-Year Follow-Up.

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Supplementary information

Table S1: Associations between lifestyle behaviours and health care utilisation for musculoskeletal pain (primary outcome) during 3 years of follow-up, stratified by musculoskeletal pain status at baseline

	Females RR (99% CI)			Males RR (99% CI)		
	Total Main analyses	Without MSK pain at baseline	With MSK pain at baseline	Total Main analyses	Without MSK pain at baseline	With MSK pain at baseline
Physical activity level						
Below recommendations	0.90 (0.85-0.96)	0.90 (0.80-1.01)	0.89 (0.83-0.95)	0.84 (0.76–0.93)	0.85 (0.74–0.98)	0.82 (0.71–0.96)
Recommended (ref.)	1	1	1	1	1	1
High	1.14 (1.04- 1.25)	1.23 (1.05- 1.44)	1.11 (0.99- 1.24)	1.20 (1.07–1.36)	1.23 (1.04–1.44)	1.22 (1.02–1.46)
Sleep duration						
Below recommendations	1.03 (0.97-1.10)	1.03 (0.91-1.18)	1.01 (0.94-1.08)	1.03 (0.93–1.14)	0.95 (0.81–1.11)	1.07 (0.93–1.24)
Recommended (ref.)	1	1	1	1	1	1
Above recommendations	1.04 (0.96-1.12)	1.09 (0.94-1.25)	1.03 (0.93-1.13)	1.03 (0.89–1.20)	1.05 (0.86–1.29)	0.98 (0.78–1.23)
Risky alcohol consumption ^a						
Yes	0.99 (0.94-1.05)	0.99 (0.89-1.09)	1.0 (0.94-1.07)	1.08 (0.98-1.18)	1.11 (0.98-1.26)	1.01 (0.88-1.15)
No (ref)	1	1	1	1	1	1
Smoking						
Yes	0.98 (0.89-1.08)	1.0 (0.82-1.22)	0.97 (0.87-1.08)	0.97 (0.85–1.11)	0.93 (0.76–1.14)	0.98 (0.82–1.17)
No (ref)	1	1	1	1	1	1
Illicit drugs last 12 months						
Yes	1.01 (0.93-1.08)	0.99 (0.86-1.15)	1.01 (0.92-1.10)	0.99 (0.89–1.10)	1.0 (0.86–1.15)	1.01 (0.87–1.17)
No (ref)	1	1	1	1	1	1
Number of adverse lifestyle behaviours ^b						
0-1 (ref)	1	1	1	1	1	1
2	1.0 (0.93–1.07)	1.03 (0.91 – 1.17)	0.97 (0.90 – 1.05)	1.02 (0.91–1.16)	1.07 (0.90–1.27)	0.97 (0.81–1.16)
3	1.01 (0.93–1.11)	1.02 (0.85 – 1.22)	1.0 (0.90 – 1.10)	1.09 (0.95–1.25)	1.18 (0.97–1.43)	0.99 (0.80–1.22)
4 or more	0.90 (0.79–1.03)	0.90 (0.68 – 1.19)	0.88 (0.75 – 1.02)	0.96 (0.80–1.16)	0.90 (0.67–1.20)	0.95 (0.75–1.22)

Abbreviations: CI, confidence interval; RR, risk ratio; MSK, musculoskeletal

The outcome reflects 0 vs. ≥ 1 healthcare contacts for musculoskeletal pain during 3 years of follow-up

All analyses are adjusted for: age, financial difficulties, anxiety/depression, chronic diseases, BMI and frequency of healthcare contacts prior to baseline. Analyses of single lifestyle behaviours were additionally adjusted for the other lifestyle behaviours

^a Alcohol Use Disorder Identification Test (AUDIT) (0–40) (Babor et al., 2001; Saunders et al., 1993), risky alcohol consumption ≥ 8

^b Includes physical activity levels below recommendations, sleep duration below recommendations, smoking, risky alcohol consumption and illicit drug

Table S2: Associations between lifestyle behaviours in male and female students and health care utilisation for musculoskeletal pain (primary outcome) during 3 years of follow-up, *only including healthcare contacts ahead of Covid-19*

	Females	Males
	RR (99% CI) ₁	RR (99% CI) ₁
Physical activity level		
Below recommendations	0.85 (0.79–0.92)	0.73 (0.64–0.83)
Recommended (ref.)	1	1
High	1.19 (1.06–1.33)	1.21 (1.05–1.39)
Sleep duration		
Below recommendations	1.04 (0.96–1.13)	1.01 (0.89–1.15)
Recommended (ref.)	1	1
Above recommendations	1.07 (0.97–1.19)	1.05 (0.88–1.26)
Risky alcohol consumption ^a		
Yes	0.98 (0.91–1.05)	1.01 (0.91–1.13)
No (ref)	1	1
Smoking		
Yes	1.01 (0.89–1.14)	0.98 (0.83–1.16)
No (ref)	1	1
Illicit drugs last 12 months		
Yes	1.0 (0.91–1.10)	0.99 (0.87–1.12)
No (ref)	1	1
Number of adverse lifestyle behaviours ^b		
0-1 (ref)	1	1
2	0.96 (0.88–1.05)	0.92 (0.79–1.07)
3	0.99 (0.89–1.11)	0.97 (0.81–1.16)
4 or more	0.89 (0.75–1.05)	0.86 (0.68–1.08)

Abbreviations: CI, confidence interval; RR, risk ratio

The outcome reflects 0 vs. ≥ 1 healthcare contacts for musculoskeletal pain during 3 years of follow-up

All analyses are adjusted for: age, financial difficulties, anxiety/depression, chronic diseases, BMI and frequency of healthcare contacts prior to baseline. Analyses of single lifestyle behaviours were additionally adjusted for the other lifestyle behaviours

^a Alcohol Use Disorder Identification Test (AUDIT) (0–40) (Babor et al., 2001; Saunders et al., 1993), risky alcohol consumption ≥ 8

^b Includes physical activity levels below recommendations, sleep duration below recommendations, smoking, risky alcohol consumption and illicit drug use

Table S3: Associations between lifestyle behaviours in male and female students and health care utilisation for musculoskeletal pain (primary outcome) during 3 years of follow-up, excluding students > 30 years of age

	Females	Males
	RR (99% CI)	RR (99% CI)
Physical activity level		
Below recommendations	0.90 (0.84–0.96)	0.83 (0.75–0.93)
Recommended (ref.)	1	1
High	1.13 (1.03–1.24)	1.21 (1.07–1.36)
Sleep duration		
Below recommendations	1.04 (0.97–1.11)	1.01 (0.91–1.13)
Recommended (ref.)	1	1
Above recommendations	1.04 (0.96–1.13)	1.04 (0.90–1.21)
Risky alcohol consumption ^a		
Yes	0.99 (0.94–1.05)	1.08 (0.98–1.18)
No (ref)	1	1
Smoking		
Yes	0.97 (0.88–1.07)	0.95 (0.83–1.09)
No (ref)	1	1
Illicit drugs last 12 months		
Yes	1.01 (0.93–1.09)	0.99 (0.90–1.10)
No (ref)	1	1
Number of adverse lifestyle behaviours ^b		
0-1 (ref)	1	1
2	1.0 (0.93–1.07)	1.02 (0.90–1.16)
3	1.01 (0.92–1.10)	1.07 (0.92–1.23)
4 or more	0.89 (0.78–1.02)	0.93 (0.77–1.12)

Abbreviations: CI, confidence interval; RR, risk ratio

The outcome reflects 0 vs. ≥ 1 healthcare contacts for musculoskeletal pain during 3 years of follow-up

All analyses are adjusted for: age, financial difficulties, anxiety/depression, chronic diseases, BMI and frequency of healthcare contacts prior to baseline. Analyses of single lifestyle behaviours were additionally adjusted for the other lifestyle behaviours

^a Alcohol Use Disorder Identification Test (AUDIT) (0–40) (Babor et al., 2001; Saunders et al., 1993), risky alcohol consumption ≥ 8

^b Includes physical activity levels below recommendations, sleep duration below recommendations, smoking, risky alcohol consumption and illicit drug use

