

# The effect of work shift on daily activity behaviours and dietary pattern in crane operators

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# INTRODUCTION

## Shift work

- 15 – 30% of work population (NHIS-OHS, 2015)
- Risk factor for NCD (Kecklund & Axelsson, 2016)
  - Causal mechanisms are not fully elucidated
  - Disruption of the circadian rhythm (Boivin & Boudreau, 2014)
  - Physiological and behavioural changes, including eating habits (Souza, 2019) and daily activity behaviours (Loprinzi, 2015)



<http://www.healthdiscovery.net/bcb/threads/2241>  
50-The-Impact-Of-Shift-Work-On-Health

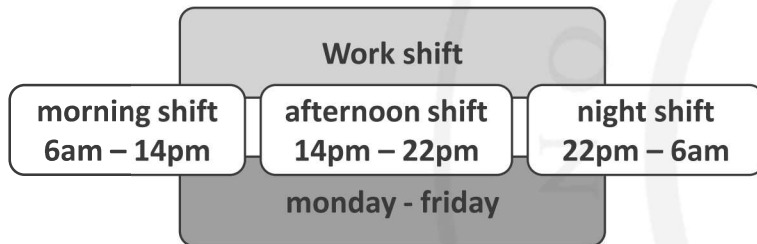
### The aim:

- 1) To test the effect of working in morning, afternoon and night shift on time spent **sleeping**, in **sedentary behaviour** and in **moderate-vigorous physical activity**.
- 2) How does specific work shift affect **dietary pattern**?

# METHODS

## Participants

- 43 healthy male crane operators
  - $37,2 \pm 6,0$  years;  $179,8 \pm 7,0$  cm,  $91,5 \pm 15,6$  kg



## Measurements:

- activPAL: sit/lie, stand, step
- Garmin Forerunner: heart rate
- Sleep diary
- Diet diary

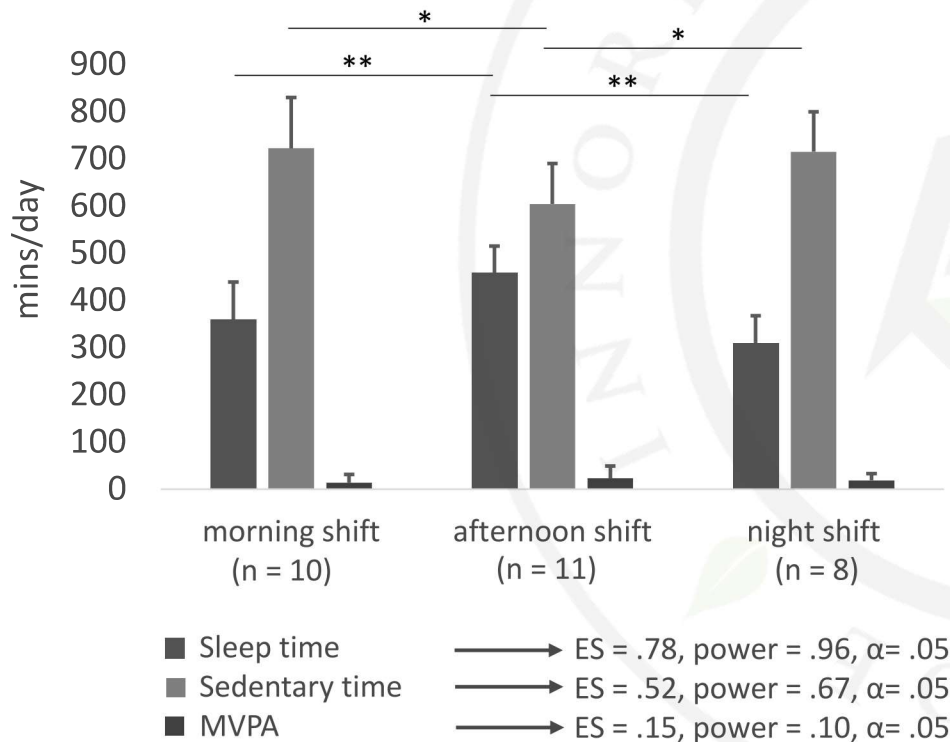


## Analysis:

- Wake-to-wake time approach
- PALanalysis (15s epoch) → MATLAB
- Heart rate Karvonen formula → MATLAB
- One-way ANOVA + post hoc,  $p < 0.05$
- Dietary pattern analysis → national criteria for unhealthy pattern

# RESULTS & DISCUSSION

## Sleep time, sedentary time, MVPA



- Short sleep, too much sedentary time, too little MVPA are health risk factors (Grgic et al., 2018)
- Sleep restriction leads to more sedentary behaviour (Bromley et al., 2012; Booth et al., 2012)
- Diurnal pattern of PA: more PA in the morning and afternoon, less in the evening (Valenti et al., 2019)
- No differences in cumulative MVPA in day and night workers (Loprinzi et al., 2015)



# RESULTS & DISCUSSION

## Dietary pattern

- Least favourable pattern in morning shift group (early morning work start)
- Shift workers skip meals, consume unhealthy foods often (Souza, 2019)
- Skip breakfast: 43 % vs. 29 % (shift vs. non-shift workers) (Kim et al., 2013)

	Morning shift (%)	Afternoon shift (%)	Night shift (%)
Eating 2 or less meals per day (on most days)	<b>33.3</b>	23.1	21.4
Eating breakfast (on most days)	53.3	61.5	<b>78.6</b>
Not eating breakfast (on most days)	<b>26.7</b>	7.7	14.3
Not eating at least one serving of vegetables per day	<b>13.3</b>	38.5	35.7
Not eating at least one serving of fruit per day	66.7	69.2	64.3
Eating very sweet food (more than once-a-week)	53.3	69.2	64.3
Drinking very sweet beverages (more than once-a-week)	13.3	<b>53.8</b>	28.6
Eating fried/fast food (more than once-a-week)	<b>33.3</b>	23.1	14.3
Eating red meat and processed meat (more than 3-times per week)	<b>66.7</b>	46.2	42.9

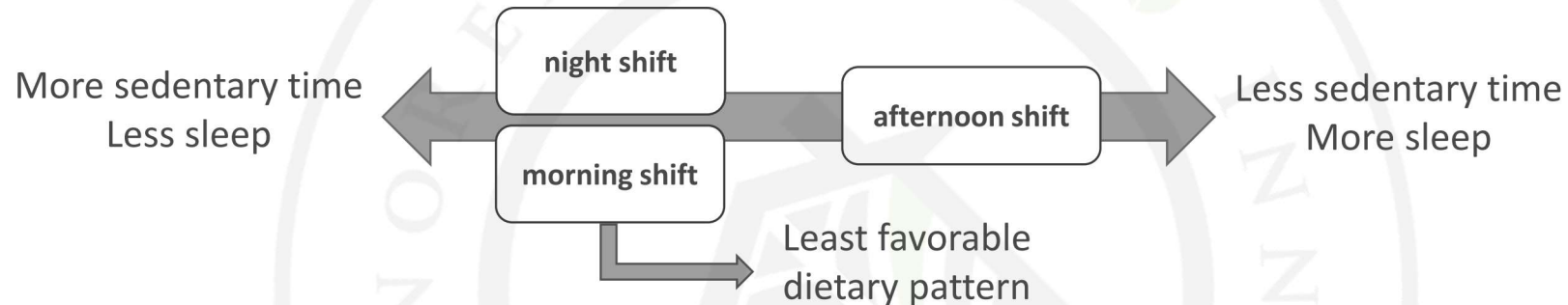




# CONCLUSION

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## Rotational shiftworkers – our results



## Healthy lifestyle promotion

- Specific diet guidelines for shift workers (Lowden et al., 2010)
- Proper sleep environment ([www.sleepfoundation.org](http://www.sleepfoundation.org))
- Regular health enhancing PA – might also contribute to better sleep (Kline, 2014)
- Reduce sedentary time (Stamatakis, 2019)



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**THANK YOU FOR YOUR ATTENTION!**

**Q & A**

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