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FACULTEIT GENEESKUNDE EN GEZONDHEIDSWETENSCHAPPEN

MOVEMENT AND SPORTS SCIENCES
RESEARCH GROUP EXERCISE PHYSIOLOGY AND SPORTS NUTRITION

UPPER RESPIRATORY SYMPTOMS IN YOUNG ELITE FEMALE GYMNASTS

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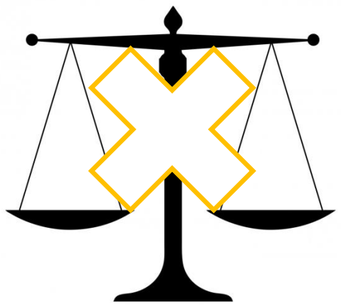
SPORT. VLAANDEREN

IT'S GYM

INTRODUCTION – METHODS – RESULTS - CONCLUSION

Elite sports performance

Optimal balance



Training Load Recovery

Performance decrements

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INTRODUCTION – METHODS – RESULTS - CONCLUSION

Upper Respiratory Tract Infections / Symptoms (URTI's/URS): most frequent illnesses in athletes

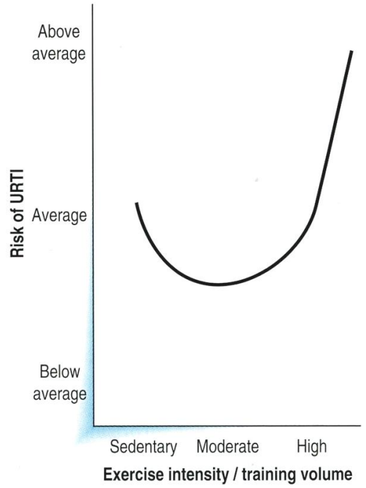
Risk factors:

- Exercise intensity/ training volume[1], elite[2]?
- Periods of hard training[3]
- Periods of competition

4 week tournaments: incidence of 6-17%[4]

♀ > ♂ [4]

After endurance events[5]



J – Curve (Nieman, 1994)

Immunoglobulin A (IgA) = marker of mucosal immune system

- Lower values → Higher infection odds[6]

AIMS

(1) To map the incidence of URS in a non-endurance sport as gymnastics.

(2) To determine to which extent Immunoglobulin A (IgA) can be associated with URS in young elite female gymnasts.

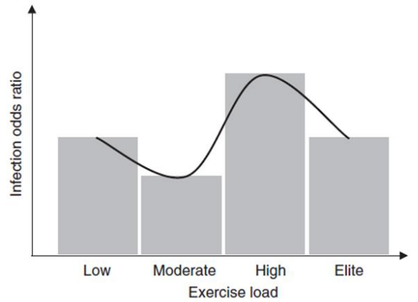


Fig. 3. Proposed S-shaped relationship between training load and infection rate.

S – Curve (Malm, 2006)

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[1]Nieman, 1994; [2]Malm, 2006; [3]Svendsen et al., 2015; [4]Schwellnus et al., 2016; [5]Nieman et al., 2006; [6]Fahlman & Engels, 2005.

Subjects: 18 ♀

Age (years old)	16.6 ± 3.4
Height (m)	1.54 ± 0.07
Body weight (kg)	46.5 ± 6.7
VO_2max (ml·min^{-1}·kg^{-1})	52.09 ± 4.63
Training volume (hours/week)	30.7 ± 1.7

Procedures

36 h before collection — Arrival at training — 10 min after drinking water

56 weeks: before every first training of the week

Measurements

Health and **fatigue** questionnaire[8]

- URS
  Sore throat, mucus in the throat, runny nose, coughing, repeatedly sneezing, fever, joint aches, weakness, headache, loss of sleep
- Severity of symptoms
  Normal training regime (scored as 1),
  Adapted training regime (scored as 2),
  No training (scored as 3)
- Doctor visits, medication use, allergy
- VAS scale fatigue & Rested scale (worse than normal (scored as -1), normal (scored as 0), better than normal (scored as 1))

Saliva collection and dimensions (ELISA)

- Saliva flow rate (mL · min^{-1})
- Absolute IgA concentration (µg · ml^{-1})
- IgA secretion rate (µg · min^{-1})
- Relative IgA value (%)

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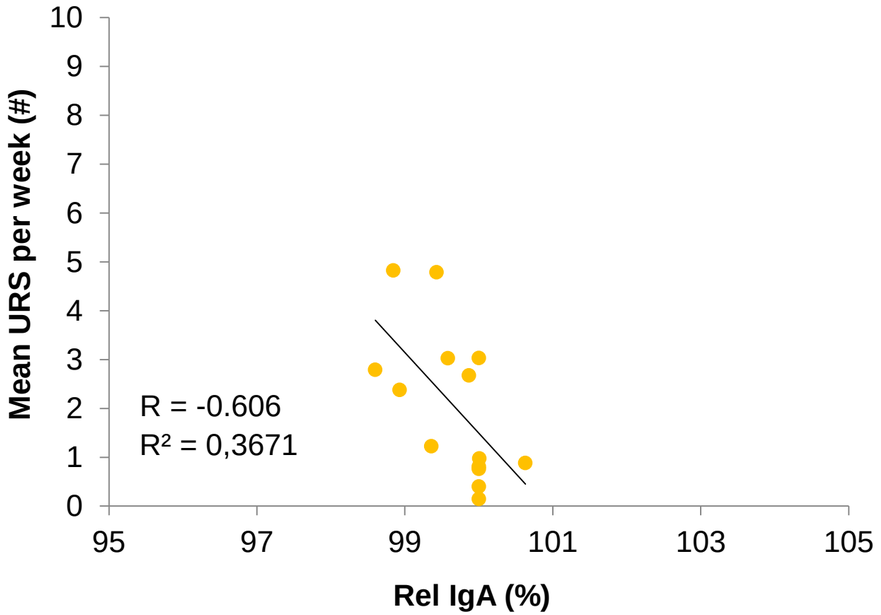
[7]Gleeson et al., 2012.

1. Descriptive values

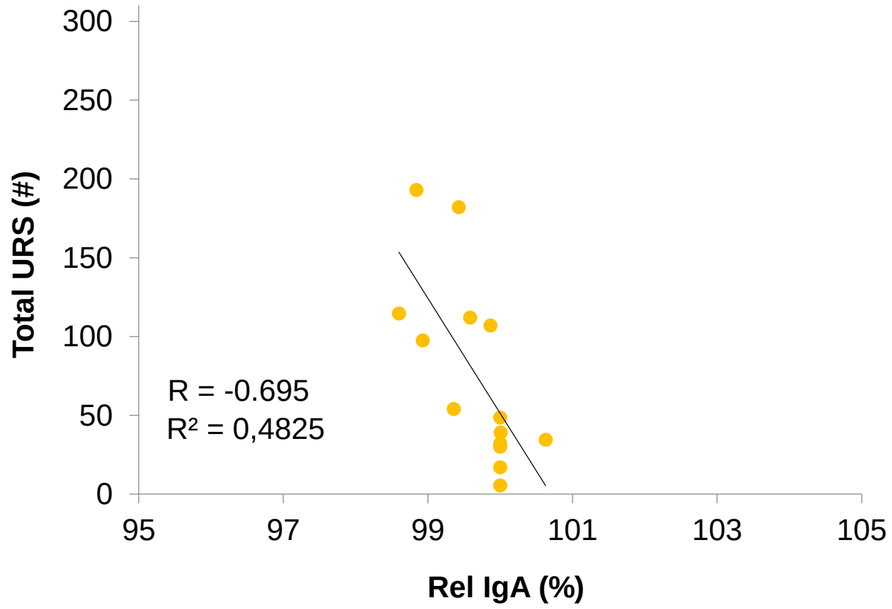
	Mean per gymnast ± SD	Min : Max	95% CI
Saliva flow rate (mL·min^{-1})	0.99 ± 0.62	0.05 : 4.87	0.95 : 1.04
Absolute IgA (µg·mL^{-1})	128 ± 75	6 : 607	122 : 134
IgA secretion rate (µg·min^{-1})	116 ± 88	2 : 679	109 : 122
Relative IgA (%)	100 ± 48	4 : 336	97 : 104
Weekly URS (#)	2.72 ± 5.95	0 : 78	2.26 : 3.17
Weekly URS episodes (#)	0.06 ± 0.24	0 : 1	0.04 : 0.08
Fatigue score (-1/0/1)	0.00 ± 0.33	-1 : 1	-0.02 : 0.03
Rested VAS (/10)	5.55 ± 1.22	0.50 : 9.60	5.42 : 5.69

2. Regressions



R = -0.606

P = 0.022



R = -0.695

P = 0.006

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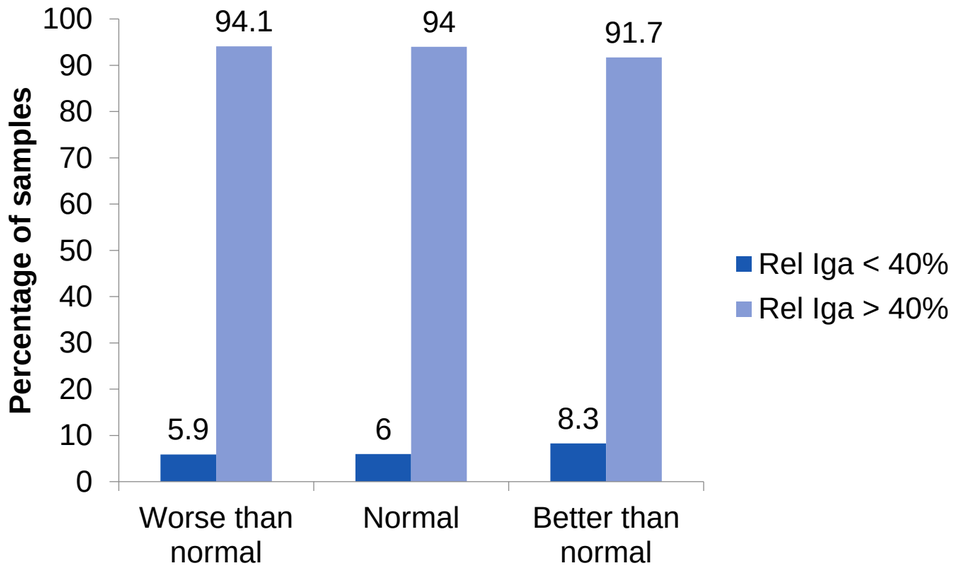
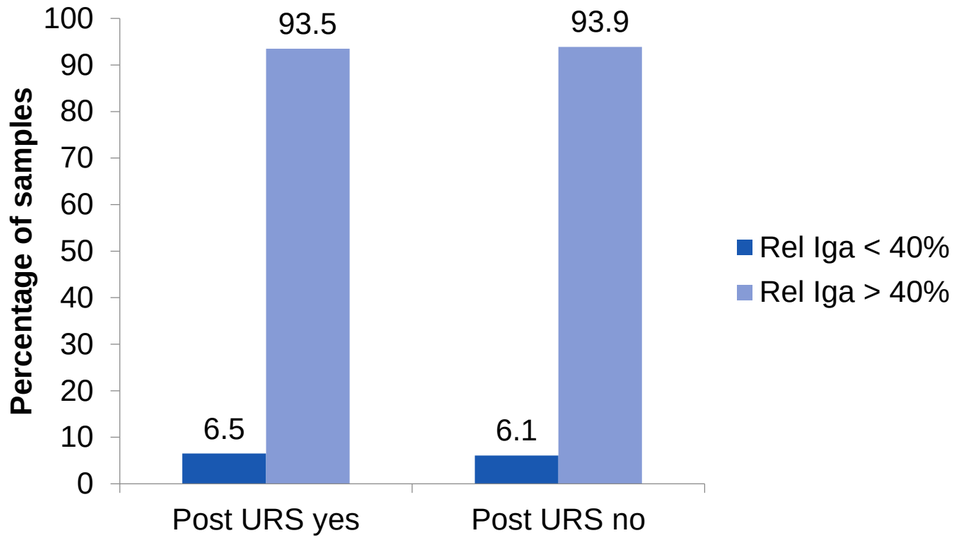
3. Crosstabs



P = 0.847



P = 0.927

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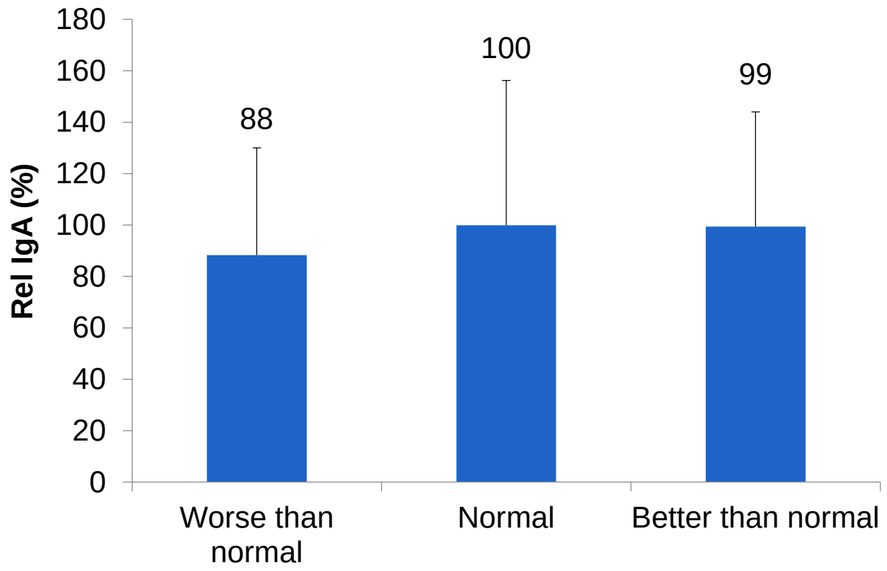
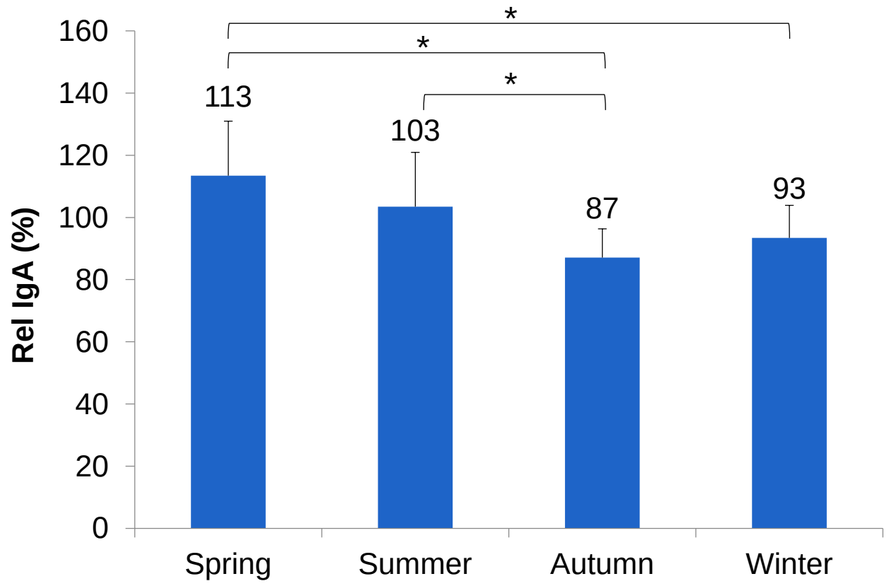
4. Differences



P = 0.579



P = 0.002

**P* < 0.05

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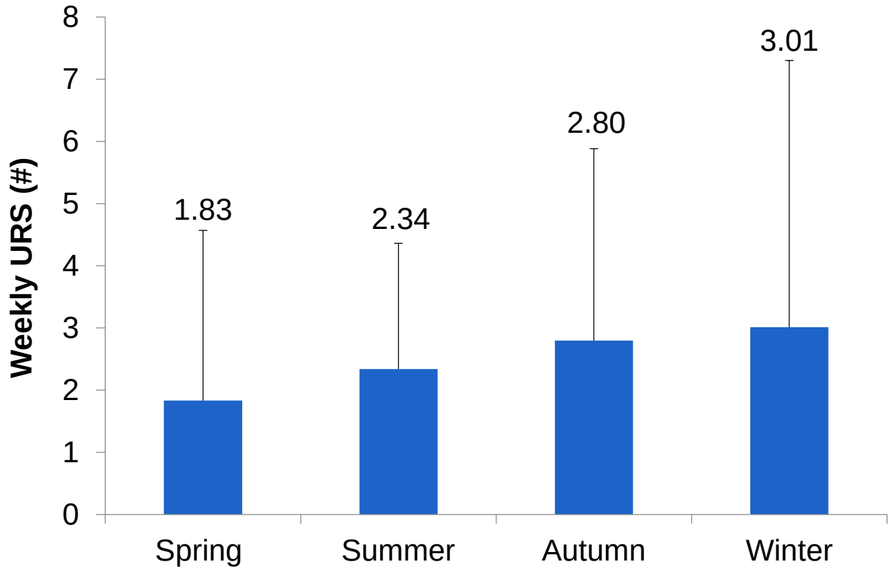
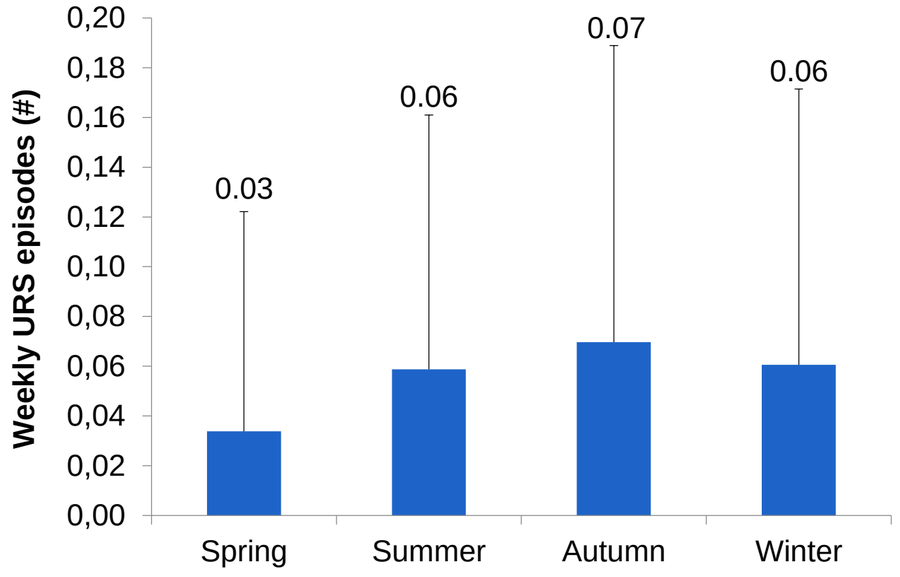
4. Differences



P = 0.535



P = 0.652

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1. IgA  ≈ Adult sailors[8]

≈ Adult endurance athletes[9]

2. Gymnasts with lower Rel IgA values are more susceptible to URS

3. Rel IgA values show significant differences between the seasons, without differences in URS

→ IgA is associated with URS in elite female gymnasts

→ IgA is not sensitive enough to predict URS in elite female gymnasts

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[8]Neville et al., 2008; [9]Nieman et al., 2006.

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