

# From Science 2 School: Sustainably healthy – active & veggy

## Survey of the prevalence of vegetarian diets linked to sports and physical exercise among Austrian pupils, teachers and principals of secondary level I and II

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### Background to Issue

Health is one of the major topics for human development and the future in education, matching the **UN “Sustainable Development Goals”:**

**No. 3 “Good Health and Well-Being” and No. 4 “Quality Education”**

Physical inactivity and overweight have been identified as global health issues of urgent concern, ranked 4th and 5th risk factors of global mortality, with 6 % and 5 % of premature deaths respectively<sup>1,2</sup>. Additionally, among Austrian children/adolescents:

- 73 – 85 % fail to achieve 60 min/day of physical exercise (females > males)<sup>3,4</sup>
- up to 30 % are overweight/obese (males > females)<sup>3,4,5</sup>

At the same time, ‘veggy’ is booming in the public (main reasons: health, animal welfare):

- 10 % of Austrians eat vegetarian or vegan (880,000)<sup>6,7</sup>
- 44 % of < 24 yr-olds in the UK view ‘veggy’ lifestyles as cooler than smoking<sup>8</sup>
- 30 % of 18 – 24 yr-olds in the UK have considered becoming or already are ‘veggy’<sup>9</sup>

Based on scientific evidence, the lifestyle factors and major pillars of sustainable health<sup>2,10,11</sup>:

**(1) diet, at best vegan, and (2) sports & exercise, at best daily moderate,**

are key to health, good or bad<sup>1,12,13,14</sup> through personal behavior and habits (40 %) <sup>15</sup>. However, only when these tools are permanently linked can the cumulative health effects be achieved by this ‘Healthy Eating – Active Living’ approach to health<sup>2,10,11</sup>.



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### Objective

However, there is no information about the trends on plant-based diets of pupils and teachers. Therefore, **the goal of this study is to determine the prevalence of vegetarian and vegan diets linked to sports & exercise among Austrian pupils and teachers/principals.** It is the first study to assess plant-based diets at Austrian schools of secondary level I and II.

### Method

Approach: interdisciplinary, cross-sectional, representative (Austria, nation-wide):

- Mandatory: approval by 9 federal educational authorities & principals at 2,688 schools
- **Basic sample size is 860,768 Austrians: 771,525 pupils & 89,243 teachers/principals**
- Data collection: October 2019 – May 2020
- Short standardized online survey in German (2 different versions for pupils and adults): 5 parts, with questions about: person, sports, nutrition, health, miscellaneous, including control questions to ensure reliable data
- Descriptive statistics (sex, age, BW/BMI, school level, diet, sports, urban vs. rural, etc.)
- Non-parametric ANOVA (significant differences among subgroups:  $p \leq 0.05$ )
- MANOVA/regression analysis (associations between subgroups, effects of diet & sports)

### Results

**Sample at 1 – 10 % response rate would be in total 8,607 – 86,076 participants:**

**7,715 – 77,152 pupils  
892 – 8,924 adults**

Based on latest numbers and research, the following results can be expected:

- (1) **10 – 30 % prevalence of vegetarians/vegans in Austrian secondary schools**
- (2) **64 – 90 % prevalence of insufficiently physically active pupils**
- (3) **24 – 36 % prevalence of overweight/obese children & adolescents**

According to these assumptions, it can be suggested that every class in secondary school level (20 – 25 children/adolescents) on average includes ...

- (1) **2 – 8 vegetarian and/or vegan pupils**
- (2) **16 – 18 pupils not achieving the minimum recommended physical exercise**
- (3) **6 – 9 overweight and/or obese pupils**

### Conclusions

Healthier lifestyles in childhood track into adulthood. Since better public health results from improved pupils’ health, it is crucial to start health-related education early, in kindergarten, and go through to university, offering healthy options at the same time.

This study will provide an important contribution to overcome the lack of information about plant-based diets linked to sport and exercise in Austrian schools. The findings could help to:

- (1) justify the need to consider this interdisciplinary but basic dual approach as a highly effective, safe and low-cost intervention to contribute improving pupils’ health,
- (2) encourage decision makers in education, such as federal/governmental authorities, principals, teachers and families to put this simple approach into action in everyday school scenarios, eg. the canteen and catering, interdisciplinary events,
- (3) develop health-orientated action competence and sustainable action readiness relating to pupils’ health through competence-orientated education.

*Future perspective:* Since food and sports are both considered ‘medicine’, with this study the ‘super’ formula for better health might be applied in practice in Austrian secondary schools:

**[plant-based diet] + [daily sports & exercise] = ‘super’ medicine**

### References

- (1) WHO (2009). Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks. WHO, Geneva, Switzerland.
- (2) Wirnitzer, KC (2018). Vegan nutrition: latest boom in health and exercise. In: Grumezescu AM & Holban AM (ed., 2018). Therapeutic, Probiotic, and Unconventional Foods. Chapter 21: 387-453. Academic Press, Elsevier: 387, 391, 409, 412, 417-420, 437.
- (3) Rameelow, D et al. (2011). Gesundheit und Gesundheitsverhalten von österreichischen Schülern und Schülerinnen Ergebnisse des WHO-HBSC-Survey 2010. Wien: Bundesministerium für Gesundheit: 146.
- (4) Österreichischer Kinder- und Jugendgesundheitsbericht (2016). Ergebnisbericht. Bundesministerium für Gesundheit: 68-69, 71, 78-79, 107.
- (5) Benham, J et al., NCD Risk Factor Collaborators (2017). Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. Lancet, 390(10113):2627-2642.
- (6) STATISTA (2016). Länder mit dem höchsten Anteil von Vegetariern an der Bevölkerung weltweit: <https://de.statista.com/statistik/daten/studie/261627/umfrage/anteil-von-vegetariern-und-veganern-an-der-bevoelkerung-ausgewaehlter-laender-weltweit> (12.7.2019).
- (7) Triconsuit & Meinungsraum.at (2018). OTS-Presseaussendung. EINLADUNG PK - Studienpräsentation: „Sind Vegetarier und Veganer die besseren Konsumenten?“
- (8) Chiarando, M (2018). 44% Of Generation Z Say Being Vegan Is ‘Cooler Than Smoking’: Young people are driving the move towards meat-free dining. [www.plantbasednews.org/post/44-of-generation-z-vegan-cooler-smoking](http://www.plantbasednews.org/post/44-of-generation-z-vegan-cooler-smoking) (12.7.2019).
- (9) Chiarando, M (2018). 30% Of British Shoppers Aged 18-24 Are Vegan Or Considering It, Says Poll. An increasing number of young people are ditching animal products. [www.plantbasednews.org/post/30-british-shoppers-18-24-vegan-considering](http://www.plantbasednews.org/post/30-british-shoppers-18-24-vegan-considering) (12.7.2019).
- (10) Institute of Medicine (IOM, 2005). Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. National Academy Press.
- (11) Tans, P. 2014. Physician update: total health. Perm J, 18 (2): 58-63.
- (12) Beaglehole, R et al. (2011). UN high-level meeting on non-communicable diseases: addressing four questions. Lancet 378: 449-455.
- (13) WHO (2010). Global Recommendations on Physical Activity for Health. Chapter 2: Physical Activity for health: 9-10.
- (14) Physicians Committee for Responsible Medicine (PCRM, 2018). Frequently Asked Questions About Nutrition. 1. Do you recommend a vegetarian or a vegan diet? [www.pcrm.org/health/diets/vegdiets/frequently-asked-questions-about-nutrition#recommended-diet](http://www.pcrm.org/health/diets/vegdiets/frequently-asked-questions-about-nutrition#recommended-diet) (8.1.2018).
- (15) Schroeder, SA (2007). Shattuck Lecture. We can do better—improving the health of the American people. N Engl J Med, 357 (12): 1221-8.

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