

Supplemental file 4

Ordinal and binary logistic regression outcomes

Article title

Heat preparedness and exertional heat illness in Paralympic athletes: A Tokyo 2020 survey

Authors

Puck Alkemade¹, Hein A. M. Daanen¹, Thomas W. J. Janssen¹, Elizabeth Broad², Victoria L. Goosey-Tolfrey³, Tatsuru Ibusuki⁴, Hiske Kneepkens⁵, Julien D. Périard⁶, Thijs M. H. Eijsvogels⁷

Corresponding author

Puck Alkemade, puckalkemade@gmail.com

Author affiliations

¹Faculty of Behavioural and Movement Sciences, Vrije Universiteit Amsterdam, Amsterdam Movement Sciences, Amsterdam, The Netherlands.

²Freelance Sports Dietitian, Huskisson, Australia.

³Peter Harrison Centre for Disability Sport, School of Sport, Exercise and Health Sciences, Loughborough University, Loughborough, Leicestershire LE11 3TU, UK.

⁴Department of Rehabilitation Medicine, Akeno Central Hospital, Oita, Japan.

⁵Sport Medisch Centrum Papendal, NOC*NSF, Arnhem, The Netherlands.

⁶University of Canberra Research Institute for Sport and Exercise, Bruce, Australia.

⁷Radboud Institute for Health Sciences, Department of Physiology, Radboud University Medical Center, Nijmegen, The Netherlands.

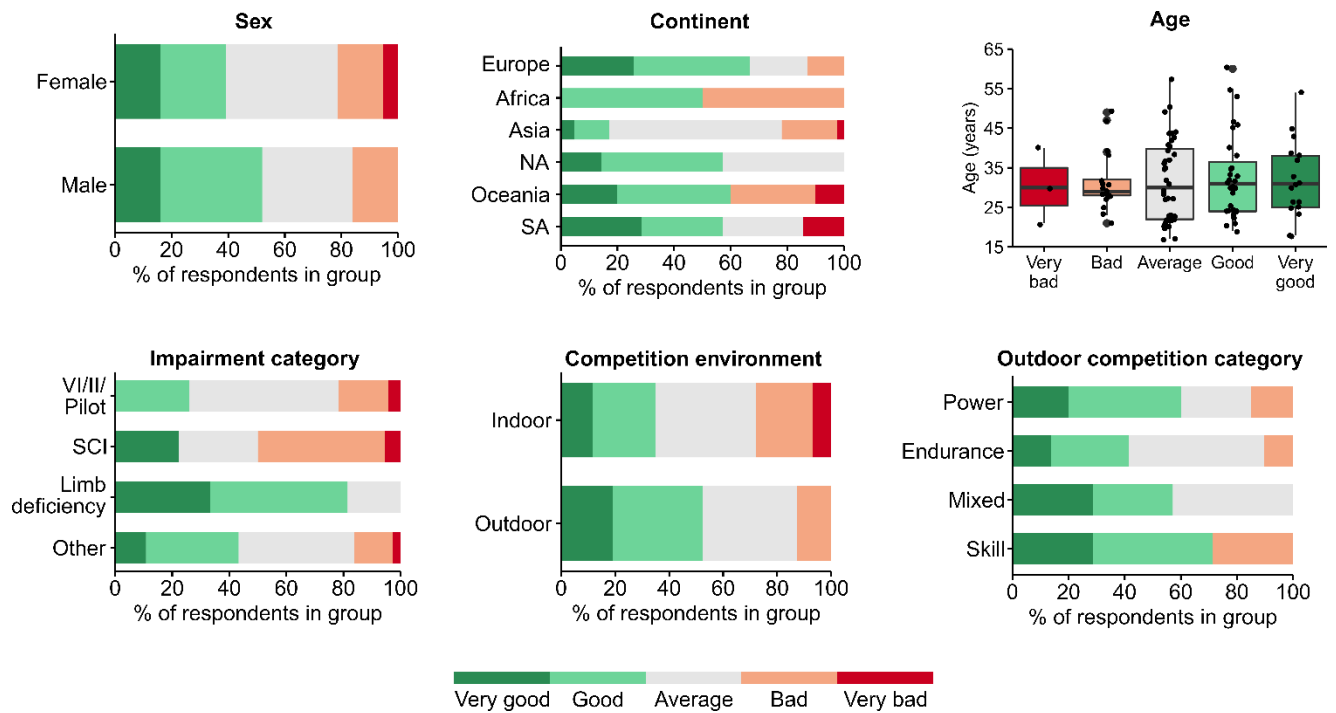


Fig. 1 Self-rated heat-coping ability by participant groups. Abbreviations: NA, North-America; SA, South-America; VI, Visual impairment; II, Intellectual impairment; SCI, spinal cord injury.

Table 1 Explanatory models for self-rated heat-coping ability, with participant characteristics as predictor variables. OR (95% CI), p-value and *n* respondents per group are presented. Abbreviations: OR, odds ratio; CI, confidence interval; Ref, reference group.

	Self-rated heat coping ability
Sex	<i>Ref: Female; n=56</i>
Male	OR=1.5 (0.7,3); p=0.3; n=50
Age	n=106
Continent	<i>Ref: Europe; n=39</i>
Africa	OR=0.2 (0,3.4); p=0.3; n=2
Asia	OR=0.2 (0.1,0.5); <u>p<0.001</u> ; n=41
North-America	OR=0.8 (0.2,3.1); p=0.7; n=7
Oceania	OR=0.4 (0.1,1.9); p=0.3; n=10
South-America	OR=0.8 (0.2,3.8); p=0.8; n=7
Impairment category	<i>Ref: VI/II/Pilot; n=23</i>
Spinal cord injury	OR=0.5 (0.2,1.7); p=0.3; n=18
Limb deficiency	OR=8.9 (3.1,26.5); <u>p<0.001</u> ; n=27
Other	OR=1.9 (0.7,5); p=0.18; n=37
Competition environment	<i>Ref: Indoor; n=43</i>
Outdoor	OR=2.2 (1.1,4.7); <u>p=0.03</u> ; n=63
Competition category, outdoor	<i>Ref: Power; n=20</i>
Endurance	OR=0.6 (0.2,1.8); p=0.4; n=29
Mixed	OR=1.4 (0.3,6.7); p=0.7; n=7
Skill	OR=1.3 (0.2,7); p=0.8; n=7

Table 2 Explanatory models for reported heat-related symptom occurrence in the past and in Tokyo, with participant characteristics as predictor variables. Percentage of “Yes”-responders, OR (95% CI), p-value and *n* respondents per group are presented. Abbreviations: OR, odds ratio; CI, confidence interval; Ref, reference group.

	Heat-related illness symptoms in the past (hot conditions)	Heat-related illness symptoms in Tokyo
Sex	Ref: Female; 58%. n=45	Ref: Female; 28%. n=29
Male	60%. OR=1.1 (0.5,2.5); p=0.9; n=47	12%. OR=0.4 (0.1,1.7); p=0.2; n=24
Age	OR=1 (0.9, 1.); p=0.6; n = 92	OR=1 (0.9, 1); p=0.2; n=53
Continent	Ref: Europe; 53%. n=34	Ref: Europe; 19%. n=21
Africa	50%. OR=0.9 (0,16.3); p=0.9; n=2	-
Asia	62%. OR=1.4 (0.5,3.8); p=0.5; n=34	5%. OR=0.2 (0,2.4); p=0.2; n=19
North-America	71%. OR=2.2 (0.4,13.6); p=0.4; n=7	33%. OR=2.1 (0.1,31.3); p=0.6; n=3
Oceania	78%. OR=3.1 (0.5,17.8); p=0.2; n=9	43%. OR=3.2 (0.5,21.1); p=0.2; n=7
South-America	33%. OR=0.4 (0.1,2.9); p=0.4; n=6	67%. OR=8.5 (0.6,125.2); p=0.1; n=3
Impairment category	Ref: VI/II/Pilot; 45%. n=20	Ref: VI/II/Pilot; 10%. n=10
Spinal cord injury	76%. OR=4 (0.9,17); <u>p=0.058</u> ; n=17	30%. OR=3.9 (0.3,47.9); p=0.3; n=10
Limb deficiency	46%. OR=1 (0.3,3.5); p>0.9; n=24	0%. OR=0 (0,Inf); p>0.9; n=12
Other	70%. OR=2.9 (0.9,9.5); p=0.1; n=30	35%. OR=4.8 (0.5,48.7); p=0.2; n=20
Competition environment	Ref: Indoor; 54%. n=37	Ref: Indoor; 30%. n=20
Outdoor	62%. OR=1.4 (0.6,3.3); p=0.5; n=55	15%. OR=0.4 (0.1,1.7); p=0.2; n=33
Competition category, outdoor	Ref: Power; 67%. n=18	Ref: Power; 12%. n=8
Endurance	62%. OR=0.8 (0.2,3.1); p=0.8; n=24	19%. OR=1.6 (0.1,19.5); p=0.7; n=16
Mixed	57%. OR=0.7 (0.1,4.1); p=0.7; n=7	0%. OR=0 (0,Inf); p>0.9; n=5
Skill	50%. OR=0.5 (0.1,3.4); p=0.5; n=6	25%. OR=2.3 (0.1,54.3); p=0.6; n=4

Table 3 Explanatory models for heat acclimation use in the past and in Tokyo, with participant characteristics as predictor variables. Percentage of “Yes”-responders, OR (95% CI), p-value and *n* respondents per group are presented. Abbreviations: OR, odds ratio; CI, confidence interval; Ref, reference group.

	Heat acclimation use in the past	Heat acclimation use in Tokyo
Sex	Ref: Female; 35%. <i>n</i>=55	Ref: Female; 57%. <i>n</i>=54
Male	56%. OR=2.4 (1.1,5.4); <u>p=0.03</u> ; <i>n</i> =50	58%. OR=1 (0.5,2.3); p=0.9; <i>n</i> =48
Age	OR=1 (1, 1.1); p=0.1; <i>n</i> =105	OR=1 (1, 1.1); p=0.3; <i>n</i> =102
Continent	Ref: Europe; 46%. <i>n</i>=39	Ref: Europe; 58%. <i>n</i>=36
Africa	50%. OR=1.2 (0.1,21.2); p=0.9; <i>n</i> =2	50%. OR=0.7 (0,13.1); p=0.8; <i>n</i> =2
Asia	38%. OR=0.7 (0.3,1.7); p=0.4; <i>n</i> =40	55%. OR=0.9 (0.3,2.2); p=0.8; <i>n</i> =40
North-America	43%. OR=0.9 (0.2,4.6); p=0.9; <i>n</i> =7	71%. OR=1.8 (0.3,10.9); p=0.5; <i>n</i> =7
Oceania	90%. OR=10.5 (1.2,95.1); <u>p=0.03</u> ; <i>n</i> =10	80%. OR=2.9 (0.5,15.9); p=0.2; <i>n</i> =10
South-America	14%. OR=0.2 (0,1.9); p=0.1; <i>n</i> =7	29%. OR=0.3 (0,1.7); p=0.2; <i>n</i> =7
Impairment category	Ref: VI/II/Pilot; 45%. <i>n</i>=22	Ref: VI/II/Pilot; 40%. <i>n</i>=20
Spinal cord injury	44%. OR=1 (0.3,3.4); p=0.9; <i>n</i> =18	61%. OR=2.4 (0.6,8.9); p=0.2; <i>n</i> =18
Limb deficiency	59%. OR=1.7 (0.5,5.6); p=0.3; <i>n</i> =27	67%. OR=3 (0.9,10.2); p=0.1; <i>n</i> =27
Other	35%. OR=0.7 (0.2,2); p=0.4; <i>n</i> =37	58%. OR=2.1 (0.7,6.5); p=0.2; <i>n</i> =36
Competition environment	Ref: Indoor; 21%. <i>n</i>=43	Ref: Indoor; 26%. <i>n</i>=42
Outdoor	61%. OR=6 (2.4,14.9); <u>p<0.001</u> ; <i>n</i> =62	80%. OR=11.3 (4.3,29.3); <u>p<0.001</u> ; <i>n</i> =60
Competition category, outdoor	Ref: Power; 75%. <i>n</i>=20	Ref: Power; 79%. <i>n</i>=19
Endurance	50%. OR=0.3 (0.1,1.2); p=0.1; <i>n</i> =28	78%. OR=0.9 (0.2,4); p=0.9; <i>n</i> =27
Mixed	100%. OR=1.4·10 ⁷ (0,Inf); p>0.9; <i>n</i> =7	86%. OR=1.6 (0.1,18.3); p=0.7; <i>n</i> =7
Skill	29%. OR=0.1 (0,1); <u>p=0.04</u> ; <i>n</i> =7	86%. OR=1.6 (0.1,18.3); p=0.7; <i>n</i> =7

Table 4 Explanatory models for cooling use in the past and in Tokyo, with participant characteristics as predictor variables. Percentage of “Yes”-responders, OR (95% CI), p-value and *n* respondents per group are presented. Abbreviations: OR, odds ratio; CI, confidence interval; Ref, reference group.

	Cooling use in the past	Cooling use in Tokyo
Sex	Ref: Female; 64%. <i>N</i>=53	Ref: Female; 82%. <i>n</i>=45
Male	68%. OR=1.2 (0.5,2.7); <i>p</i> =0.7; <i>n</i> =50	72%. OR=0.6 (0.2,1.6); <i>p</i> =0.3; <i>n</i> =43
Age	OR=1 (1, 1); <i>p</i> >0.9; <i>n</i> =103	OR=1 (1, 1.1); <i>p</i> =0.1; <i>n</i> =88
Continent	Ref: Europe; 62%. <i>n</i>=39	Ref: Europe; 82%. <i>n</i>=28
Africa	50%. OR=0.6 (0,11.4); <i>p</i> =0.7; <i>n</i> =2	100%. OR=2.5·10 ⁷ (0, Inf); <i>p</i> >0.9; <i>n</i> =2
Asia	72%. OR=1.6 (0.6,4.3); <i>p</i> =0.3; <i>n</i> =40	72%. OR=0.6 (0.2,1.9); <i>p</i> =0.3; <i>n</i> =39
North-America	50%. OR=0.6 (0.1,3.6); <i>p</i> =0.6; <i>n</i> =6	50%. OR=0.2 (0,1.5); <i>p</i> =0.1; <i>n</i> =6
Oceania	100%. OR=2.7·10 ⁷ (0,Inf); <i>p</i> >0.9; <i>n</i> =10	100%. OR=2.5·10 ⁷ (0, Inf); <i>p</i> >0.9; <i>n</i> =10
South-America	17%. OR=0.1 (0,1.2); <i>p</i> =0.1; <i>n</i> =6	67%. OR=0.4 (0,6.1); <i>p</i> =0.5; <i>n</i> =3
Impairment category	Ref: VI/II/Pilot; 59%. <i>n</i>=22	Ref: VI/II/Pilot; 61%. <i>n</i>=18
Spinal cord injury	72%. OR=1.8 (0.5,7); <i>p</i> =0.4; <i>n</i> =18	81%. OR=2.8 (0.6,13.7); <i>p</i> =0.2; <i>n</i> =16
Limb deficiency	68%. OR=1.5 (0.4,5); <i>p</i> =0.5; <i>n</i> =25	71%. OR=1.5 (0.4,5.8); <i>p</i> =0.5; <i>n</i> =24
Other	65%. OR=1.3 (0.4,3.9); <i>p</i> =0.7; <i>n</i> =37	90%. OR=5.5 (1.2,26.1); <u><i>p</i>=0.03</u> ; <i>n</i> =29
Competition environment	Ref: Indoor; 46%. <i>n</i>=41	Ref: Indoor; 58%. <i>n</i>=31
Outdoor	79%. OR=4.4 (1.8,10.6); <u><i>p</i><0.001</u> ; <i>n</i> =62	88%. OR=5.2 (1.7,15.3); <u><i>p</i>=0.003</u> ; <i>n</i> =57
Competition category, outdoor	Ref: Power; 80%. <i>n</i>=20	Ref: Power; 82%. <i>n</i>=17
Endurance	79%. OR=0.9 (0.2,3.9); <i>p</i> =0.9; <i>n</i> =28	89%. OR=1.7 (0.3,10); <i>p</i> =0.5; <i>n</i> =27
Mixed	100%. OR=1.1·10 ⁷ (0, Inf); <i>p</i> >0.9; <i>n</i> =7	100%. OR=2.5·10 ⁷ (0, Inf); <i>p</i> >0.9; <i>n</i> =7
Skill	57%. OR=0.3 (0.1,2.2); <i>p</i> =0.2; <i>n</i> =7	83%. OR=1.1 (0.1,13.5); <i>p</i> >0.9; <i>n</i> =6

Table 5 Explanatory models strategy use in Tokyo, with EHI symptom history as predictor variables. Percentage of “Yes”-responders, OR (95% CI), p-value and *n* respondents per group are presented. Abbreviations: OR, odds ratio; CI, confidence interval; Ref, reference group.

	Heat acclimation use in Tokyo	Cooling use in Tokyo
Heat-related illness symptoms in the past	Ref: No; 44%. <i>n</i>=36	Ref: No; 60%. <i>n</i>=30
Yes	66%. OR=2.4 (1.5,9); <u>p=0.045</u> ; <i>n</i> =53	86%. OR=4 (1.3,12.1); <u>p=0.01</u> ; <i>n</i> =49

Table 6 Explanatory models for heat-related symptom occurrence in Tokyo, with strategy use in Tokyo as predictor variables. Percentage of “Yes”-responders, OR (95% CI), p-value and *n* respondents per group are presented. Abbreviations: OR, odds ratio; CI, confidence interval; Ref, reference group.

	Heat-related illness symptoms in Tokyo
Heat acclimation use in Tokyo	Ref: No; 14%. <i>n</i>=21
Yes	25%. OR=2 (0.5,8.9); p=0.4; <i>n</i> =32
Cooling use in Tokyo	Ref: No; 0%. <i>n</i>=11
Yes	19%. OR=2.7·10 ⁷ (0, Inf); p>0.9; <i>n</i> =36