

2009

Body Mass Changes and Voluntary Fluid Intakes of Keelboat Sailors

Norman, S.

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The Plymouth Student Scientist
University of Plymouth

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Chapter 8

Appendix 1 – Consent Form

**UNIVERSITY OF PLYMOUTH
FACULTY OF SCIENCE**

Human Ethics Committee Sample Consent Form

CONSENT TO PARTICIPATE IN RESEARCH PROJECT / PRACTICAL STUDY

Name of Principal Investigator

Samantha Norman

Title of Research

A study to investigate body mass changes and voluntary fluid intake of keelboat sailors whilst racing

Brief statement of purpose of work

This study is to investigate if body mass changes occur during keelboat sailing. Your body mass will be measured before you go on the water and on return from sailing as well any food or drink being measured before and after sailing. Additionally a urine sample will be required however you do not have to provide one. This sample will be analysed to see if you are dehydrated or not.

The objectives of this research have been explained to me.

I understand that I am free to withdraw from the research at any stage, and ask for my data to be destroyed if I wish.

I understand that my anonymity is guaranteed, unless I expressly state otherwise.

I understand that the Principal Investigator of this work will have attempted, as far as possible, to avoid any risks, and that safety and health risks will have been separately assessed by appropriate authorities (e.g. under COSHH regulations)

Under these circumstances, I agree to participate in the research.

Name:

Signature:

Date:

Appendix 2 – Information Sheet

UNIVERSITY OF PLYMOUTH

FACULTY OF SCIENCE

RESEARCH INFORMATION SHEET

Name of Principal Investigator

Samantha Norman

Title of Research

A study to investigate body mass changes and voluntary fluid intake of keelboat sailors whilst racing

Aim of research

To see if body mass changes occur during sailing.

Description of procedure

Body mass will be measured before and after sailing as well as any food or drink being measured both before and after. A urine sample will be given and analysed to see if the participant is dehydrated by measuring urine osmolality, colour and the amount of urine.

Description of risks

Normal risks from sailing with the university yacht club

Benefits of proposed research

To find out if sailors should be educated to drink more fluid and eat more food whilst racing.

Right to withdraw

The participants have the right to withdraw at any time.

If you are dissatisfied with the way the research is conducted, please contact the principal investigator in the first instance: telephone number [07975809650](tel:07975809650). If you feel the problem has not been resolved please contact the secretary to the Faculty of Science Human Ethics Committee: Ms Christine Brown 01752 232762.

Appendix 3 – Lucozade Sport and Lucozade Sports Science Academy
Urine Colour Chart

Is your body getting the fluid it needs?

Lucozade SPORT
LUCOZADE SPORT SCIENCE ACADEMY

psa
LUCOZADE SPORT SCIENCE ACADEMY

URINE CHART

Urine Color	Number	Category
Pale yellow	1	target
Light yellow	2	target
Yellow	3	dehydration
Orange-yellow	4	dehydration
Dark orange	5	severe dehydration
Dark brown	6	severe dehydration

EFFECTS OF FLUID LOSS:
PHYSICAL EFFECTS – reduction in muscular strength, perception of effort is increased, fatigue/reduction in pace
MENTAL EFFECTS – reduced concentration, reduced skill/accuracy, reduction in decision-making ability

www.thelssa.com/shop
for all your sports nutrition needs

Lucozade Sport and Lucozade Sport Science Academy are trade marks of the GlaxoSmithKline group of companies

Appendix 4 – Mean and range for the participant variables

<i>Variable</i>	<i>Males (30)</i>	<i>Females (6)</i>
Age (years)	20 (19 to 21)	21 (19 to 22)
Height (m)	1.79 (1.57 to 1.96)	1.66 (1.60 to 1.73)
Body Mass (kg)	77.73 (61.80 to 98.90)	70.15 (60.70 to 86.70)
Body Mass Index	24.17 (18.9 to 31.28)	25.27 (23.71 to 28.97)

Appendix 5 – Mean Sweat Rates for each week

<i>Variable</i>	<i>Sweat Rate ml/hr</i>
week 1	272.08
week2	416.44
week 3	329.64
week 4	670.00
average	432.19

Appendix 6 – Job Descriptions

<i>Job Role</i>	<i>Place on Boat</i>	<i>Description/responsibilities</i>
Bow	Front	Sets up the Jib and Spinnaker (types of sails) so that they can be used when they are needed, also hoists and drops the sails.
Pit	Next to the bow	Assists the Bow with raising and lowering sails and adjusts the sail shape to maximise efficiency.
Trim	Middle	To make the boat go fast by adjusting the sails to increase the ability to catch the wind.
Main	Next to helm	Responsible for the setting the main sail and assisting the helm in decision making.
Helm	Back	Steers the boat around the course and makes decisions about which way to go.

Appendix 7 - SPSS Correlations

* Correlation is significant at the 0.05 level (2-tailed).
 ** Correlation is significant at the 0.01 level (2-tailed).

		Participant	Height	Pre weight	Fluid brought	Post weight	Fluid consumed	Urine amount	Urine colour	Osmolality	Weight change	Estimated water loss	Percent dehydration	Weight change grams	Sweat loss	Exercise time	Sweat rate hr	Sweat rate min
Participant	Pearson Correlation	1	.144	-.074	.096	-.089	.358(*)	.122	-.324	-.673	-.252	.358(*)	.283	.139	.280	-.287	.357(*)	.358(*)
	Sig. (2-tailed)		.404	.669	.578	.605	.032	.818	.530	.143	.138	.032	.094	.420	.115	.106	.041	.041
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Height	Pearson Correlation	.144	1	.650(**)	.089	.637(**)	.231	-.310	.645	.481	-.109	.232	.117	.214	.329	.003	.313	.313
	Sig. (2-tailed)	.404		.000	.606	.000	.174	.550	.167	.334	.528	.174	.497	.210	.061	.985	.076	.076
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Pre weight	Pearson Correlation	-.074	.650(**)	1	-.175	.998(**)	.024	-.780	.724	.719	.115	.024	-.126	-.143	-.042	-.123	.003	.003
	Sig. (2-tailed)	.669	.000		.309	.000	.890	.067	.103	.108	.502	.891	.464	.406	.815	.495	.988	.988
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Fluid brought	Pearson Correlation	.096	.089	-.175	1	-.175	.645(**)	.086	.140	-.062	-.034	.645(**)	.044	.178	.583(**)	.115	.530(**)	.530(**)
	Sig. (2-tailed)	.578	.606	.309		.307	.000	.871	.791	.907	.843	.000	.799	.300	.000	.524	.002	.002
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Post weight	Pearson Correlation	-.089	.637(**)	.998(**)	-.175	1	.025	-.790	.738	.734	.179	.024	-.189	-.126	-.029	-.145	.023	.023
	Sig. (2-tailed)	.605	.000	.000	.307		.887	.062	.094	.097	.297	.888	.270	.462	.871	.421	.897	.897
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Fluid consumed	Pearson Correlation	.358(*)	.231	.024	.645(**)	.025	1	.160	-.054	-.191	.014	1.000(**)	-.007	.306	.820(**)	-.013	.763(**)	.763(**)
	Sig. (2-tailed)	.032	.174	.890	.000	.887		.762	.919	.717	.937	.000	.969	.069	.000	.944	.000	.000

	tailed)																	
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Urine amount	Pearson Correlation	.122	-.310	-.780	.086	-.790	.160	1	-.323	-.301	-.296	.160	.340	.020	.014	.033	.018	.018
	Sig. (2-tailed)	.818	.550	.067	.871	.062	.762		.533	.562	.569	.762	.509	.970	.979	.950	.973	.973
	N	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Urine colour	Pearson Correlation	-.324	.645	.724	.140	.738	-.054	-.323	1	.827(*)	.374	-.055	-.395	-.639	-.358	.348	-.567	-.568
	Sig. (2-tailed)	.530	.167	.103	.791	.094	.919	.533		.042	.465	.918	.438	.172	.487	.499	.240	.240
	N	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Osmolality	Pearson Correlation	-.673	.481	.719	-.062	.734	-.191	-.301	.827(*)	1	.400	-.191	-.434	-.300	-.286	.437	-.635	-.635
	Sig. (2-tailed)	.143	.334	.108	.907	.097	.717	.562	.042		.431	.717	.390	.564	.582	.387	.176	.176
	N	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Weight change	Pearson Correlation	-.252	-.109	.115	-.034	.179	.014	-.296	.374	.400	1	.012	-.996(**)	.230	.188	-.352(*)	.314	.313
	Sig. (2-tailed)	.138	.528	.502	.843	.297	.937	.569	.465	.431		.943	.000	.177	.296	.045	.076	.076
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Estimated water loss	Pearson Correlation	.358(*)	.232	.024	.645(**)	.024	1.000(**)	.160	-.055	-.191	.012	1	-.006	.306	.820(**)	-.012	.762(**)	.762(**)
	Sig. (2-tailed)	.032	.174	.891	.000	.888	.000	.762	.918	.717	.943		.974	.069	.000	.946	.000	.000
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Percent dehydration	Pearson Correlation	.283	.117	-.126	.044	-.189	-.007	.340	-.395	-.434	.996(**)	-.006	1	-.211	-.177	.358(*)	-.301	-.301
	Sig. (2-tailed)	.094	.497	.464	.799	.270	.969	.509	.438	.390	.000	.974		.218	.324	.041	.089	.089
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Weight change grams	Pearson Correlation	.139	.214	-.143	.178	-.126	.306	.020	-.639	-.300	.230	.306	-.211	1	.775(**)	.047	.693(**)	.693(**)

Sweat loss	Sig. (2-tailed)	.420	.210	.406	.300	.462	.069	.970	.172	.564	.177	.069	.218	.000	.796	.000	.000	
	N	36	36	36	36	36	36	6	6	6	36	36	36	36	33	33	33	33
Exercise time	Pearson Correlation	.280	.329	-.042	.583(**)	-.029	.820(**)	.014	-.358	-.286	.188	.820(**)	-.177	.775(**)	1	-.010	.932(**)	.931(**)
	Sig. (2-tailed)	.115	.061	.815	.000	.871	.000	.979	.487	.582	.296	.000	.324	.000	.956	.000	.000	
Sweat rate hr	N	33	33	33	33	33	33	6	6	6	33	33	33	33	33	33	33	33
	Pearson Correlation	-.287	.003	-.123	.115	-.145	-.013	.033	.348	.437	.352(*)	-.012	.358(*)	.047	-.010	1	-.318	-.318
Sweat rate min	Sig. (2-tailed)	.106	.985	.495	.524	.421	.944	.950	.499	.387	.045	.946	.041	.796	.956	.072	.071	
	N	33	33	33	33	33	33	6	6	6	33	33	33	33	33	33	33	33
Sweat rate hr	Pearson Correlation	.357(*)	.313	.003	.530(**)	.023	.763(**)	.018	-.567	-.635	.314	.762(**)	-.301	.693(**)	.932(**)	-.318	1	1.000(**)
	Sig. (2-tailed)	.041	.076	.988	.002	.897	.000	.973	.240	.176	.076	.000	.089	.000	.000	.072	.000	
Sweat rate min	N	33	33	33	33	33	33	6	6	6	33	33	33	33	33	33	33	33
	Pearson Correlation	.358(*)	.313	.003	.530(**)	.023	.763(**)	.018	-.568	-.635	.313	.762(**)	-.301	.693(**)	.931(**)	-.318	1.000(**)	1
Sweat rate min	Sig. (2-tailed)	.041	.076	.988	.002	.897	.000	.973	.240	.176	.076	.000	.089	.000	.000	.071	.000	
	N	33	33	33	33	33	33	6	6	6	33	33	33	33	33	33	33	33

Appendix 8 Ethical Approval Forms

UNIVERSITY OF PLYMOUTH FACULTY OF SCIENCE

Human Ethics Committee

APPLICATION FOR ETHICAL APPROVAL OF RESEARCH INVOLVING HUMAN PARTICIPANTS

All applicants should read the guidelines at the end of this application

This is a WORD document. Please complete in WORD and extend space where necessary.

[All applications must be word processed. Handwritten applications will be returned.](#)

One *signed* hard-copy must be sent to Christine Brown. You may also send an unsigned electronic copy of your application to c5brown@plymouth.ac.uk as this will speed up the review process

1. TYPE OF PROJECT

1.1 What is the type of project? (Tick 1 only)

STAFF should tick one of the three options below:

Specific project

Tick this box if you are seeking approval for a specific study, or set of studies, with methods that are explained fully in the following sections. This form of approval is appropriate for funded projects with a clear plan of work and limited duration.

Thematic programme of research

Tick this box if you are seeking approval for a programme of work using a single paradigm.

This form Of approval is appropriate for pilot work, or routine work that is ethically straightforward. Note, the maximum period of approval for thematic ethical clearance is 3 years.

Practical / Laboratory Class

Tick this box if you are seeking approval for a teaching activity which involves student involvement in the role of an experimental participant.

1.2 Tick 1 only

POSTGRADUATE STUDENTS should tick one of the options below:

Taught Masters Project

M.Phil / PhD by research

UNDERGRADUATE STUDENTS should tick one of the two options below:

Student research project

X

Practical / Laboratory class where you are acting as the experimenter

2. APPLICATION

2.1 TITLE of Research project

Body Mass Changes and voluntary fluid Intake of Keelboat Sailors whilst Racing

2.2 General summary of the proposed research for which ethical clearance is sought, briefly outlining the aims and objectives and providing details of interventions/procedures involving participants (no jargon)

The aim of the project is to see if the body mass of keelboat sailors changes whilst racing due to dehydration and nutrient losses. The study will take part using volunteers from the university yacht club who are all keen sailors and have consented to being weighted before and after sailing and to have any food and drink they take with them measured. As well as measuring the food and fluid intake during sailing a urine sample would be required to look at the dehydration levels of the sailors, this will be analysed by the sailors and they will only have to provide a sample if they wish to.

As well as measuring the body mass changes of the sailors whilst on the water a sample of the volunteers will be asked to go into the sports science lab where a few basic test can be performed to look at there body composition, height and weight .

2.3 Physical site(s) where research will be carried out

Mountbatten Centre

Yacht Haven Marina

Sport and Exercise laboratory

2.4 External Institutions involved in the research (e.g. other university, hospital, prison etc.)

None

2.5 Name(s), position(s) and affiliation(s) of investigator(s) seeking approval, including any external investigators

Samantha Norman, undergraduate student in applied marine sports science

2.6 Name, telephone number, e-mail address and position of lead person for this project:

Samantha Norman

07975809650

samantha.norman@students.plymouth.ac.uk

2.7 You may include relevant experience of lead researcher (optional)

2.8 Start and end date for research for which ethical clearance is sought (NB maximum period is 3 years)

Start date: January 2008 End date: March 2008

2.9 Name(s) of funding source(s) if any

None

2.10 Has funding already been received?

No In-part Yes

2.11 Has this same project received ethical approval from another Ethics Committee?

No Yes

2.12 If yes, do you want Chairman's action?

No Yes

If yes, please include other application and approval letter and STOP HERE. If no, please continue

3. BREAKDOWN OF PARTICIPANTS

3.1 Summary of participants

Type of participant	Number of participants
Non-vulnerable Adults	50
Minors (< 16 years)	
Minors (16-18 years)	
Vulnerable Participants (other than by virtue of being a minor)	
Other (please specify)	

TOTAL	50
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3.2 How were the sample sizes determined?

Ideally every week between 5 and 10 participants will be measured and the same participants may be used again.

3.3 How will subjects be recruited?

Volunteers from the university of Plymouth yacht club

3.4 Will subjects be financially rewarded? If yes, please give details.

No

4. NON-VULNERABLE ADULTS

4.1 Are some or all of the participants non-vulnerable adults?

No

Yes

4.2 How will participants be recruited? Name any other institution(s) involved

Volunteers from the university of Plymouth yacht club

4.3 Inclusion / exclusion criteria

Sailors will have to give consent to take part in the study and they will be given an option to pull out at any stage. They will have to be participant that sail fairly regularly and are willing to take part.

4.4 How will participants give informed consent?

They will fill out a form to give consent and be given the option to pull out at any stage.

4.5 Consent form(s) attached

No

Yes

If no, why not?

4.6 Information sheet(s) attached

No

Yes

If no, why not?

4.7 How will participants be made aware of their right to withdraw at any time?

It will be on the consent form and they will be reminded of the option throughout the research.

4.8 How will confidentiality be maintained, including archiving / destruction of primary data where appropriate, and how will the security of the data be maintained?

All the data will be confidential and the participants will be called subject A, subject B etc.

5. MINORS <16 YEARS

5.1 Are some or all of the participants under the age of 16?

No

Yes

If yes, please consult special guidelines for working with minors. If no, please continue.

5.2 Age range(s) of minors

5.3 How will minors be recruited? (See guidelines). Name any other institution(s) involved

5.4 Inclusion / exclusion criteria

5.5 How will minors give informed consent? (See guidelines)

5.6 Consent form(s) for minor attached

No

Yes

If no, why not?

5.7 Information sheet(s) for minor attached

No

Yes

If no, why not?

5.8 Consent form(s) for parent / legal guardian attached

No

Yes

If no, why not?

5.9 Information sheet(s) for parent / legal guardian attached

No

Yes

If no, why not?

5.10 How will minors be made aware of their right to withdraw at any time?
5.11 How will confidentiality be maintained, including archiving / destruction of primary data where appropriate, and how will the security of the data be maintained?

6. MINORS 16-18 YEARS OLD

6.1 Are some or all of the participants between the ages of 16 and 18?
No <input checked="" type="checkbox"/> X Yes <input type="checkbox"/>
<i>If yes, please consult special guidelines for working with minors. If no, please continue.</i>
6.2 How will minors be recruited? (See guidelines). Name any other institution(s) involved
6.3 Inclusion / exclusion criteria
6.4 How will minors give informed consent? (See guidelines)
6.5 Consent form(s) for minor attached
No <input type="checkbox"/> Yes <input type="checkbox"/>
<i>If no, why not?</i>
6.6 Information sheet(s) for minor attached
No <input type="checkbox"/> Yes <input type="checkbox"/>
<i>If no, why not?</i>
6.7 Consent form(s) for parent / legal guardian attached

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7.6 Consent form(s) for vulnerable person attached
No <input type="checkbox"/> Yes <input type="checkbox"/>
<i>If no, why not?</i>
7.7 Information sheet(s) for vulnerable person attached
No <input type="checkbox"/> Yes <input type="checkbox"/>
<i>If no, why not?</i>
7.8 Consent form(s) for parent / legal guardian attached
No <input type="checkbox"/> Yes <input type="checkbox"/>

<i>If no, why not?</i>
7.9 Information sheet(s) for parent / legal guardian attached
No <input type="checkbox"/> Yes <input type="checkbox"/>
<i>If no, why not?</i>
7.10 How will participants be made aware of their right to withdraw at any time?
7.11 How will confidentiality be maintained, including archiving / destruction of primary data where appropriate, and how will the security of the data be maintained?

8. EXTERNAL CLEARANCES

Investigators working with children and vulnerable adults legally require clearance from the Criminal Records Bureau (CRB)

<p>8.1 Do ALL experimenters in contact with children and vulnerable adults have <u>current</u> CRB clearance? Please include photocopies.</p>		
No <input type="checkbox"/>	Yes <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
<p>8.2 If no, explain</p>		
<p>8.3 If your research involves external institutions (school, social service, prison, hospital etc) please provide cover letter(s) from institutional heads permitting you to carry out research on their clients, and where applicable, on their site(s). Are these included?</p>		
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	N/A <input type="checkbox"/>
<p>If not, why not?</p>		
<p>Have been given verbal agreement to carry out the research.</p>		
<p>8.4 If research is being carried out off-campus, please provide evidence of, or explain how you are covered for indemnity</p>		
<p>A risk assessment will be carried out and all participant will be taking part in yacht club activities and therefore covered by there sports card insurance.</p>		

9. PROCEDURE

<p>9.1 Describe procedures that participants will engage in, Please do not use jargon</p>
<p>The participants will be weighted before they go sailing and all food and drink they take with them will be measured, on return the participants will be weighed and there remaining food and drink will be measured to see how much they have consumed.</p> <p>They will also have to give a urine sample if they need to evacuate there bladder, but this is option for the participant as they will need to measure the amount of urine collected and the urine osmolality to see how dehydrated they are.</p> <p>Additionally a sample of participants will be asked to go into the sports lab to take basic measurements, like height, weight, % body fat, and vo2 max.</p>
<p>9.2 How long will the procedures take? Give details</p>
<p> </p>

The procedures before and after sailing should take about half an hour and the procedures in the sports lab should take about an hour.

9.3 Does your research involve deception?

No **X**

Yes

9.4 If yes, please explain why the following conditions apply to your research:

a) Deception is completely unavoidable if the purpose of the research is to be met

b) The research objective has strong scientific merit

c) Any potential harm arising from the proposed deception can be effectively neutralised or reversed by the proposed debriefing procedures (see section below)

9.5 Describe how you will debrief your participants

All the results will be made available to the participants after the study and they will be thanked for taking part and reminded if they wish to pull out of the study they can.

9.6 Are there any ethical issues (e.g. sensitive material)?

No **X**

Yes

9.7 If yes, please explain. You may be asked to provide ethically sensitive material. See also section 11

10. PHYSICAL RISK ASSESSMENT

10.1 Will participants be at risk of physical harm (e.g. from electrodes, other equipment)? (See guidelines)

No **X**

Yes

10.2 If yes, please describe

10.3 What measures have been taken to minimise risk? Include risk assessment proformas.

10.4 How will you handle participants who appear to have been harmed?

11. PSYCHOLOGICAL RISK ASSESSMENT

11.1 Will participants be at risk of psychological harm (e.g. viewing explicit or emotionally sensitive material, being stressed, recounting traumatic events)? (See guidelines)

No Yes

11.2 If yes, please describe

11.3 What measures have been taken to minimise risk?

11.4 How will you handle participants who appear to have been harmed?

12. RESEARCH OVER THE INTERNET

12.1 [Will research be carried out over the internet?](#)

No Yes

12.2 If yes, please explain protocol in detail, explaining how informed consent will be given, right to withdraw maintained, and confidentiality maintained. Give details of how you will guard against abuse by participants or others (see guidelines)

13. CONFLICTS OF INTEREST & THIRD PARTY INTERESTS

13.1 Do any of the experimenters have a conflict of interest? (See guidelines)

No Yes

13.2 If yes, please describe

13.3 Are there any third parties involved? (See guidelines)
No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>
13.4 If yes, please describe
13.5 Do any of the third parties have a conflict of interest?
No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>
13.6 If yes, please describe

14. ADDITIONAL INFORMATION

14.1 [Optional] Give details of any professional bodies whose ethical policies apply to this research
14.2 [Optional] Please give any additional information that you wish to be considered in this application