De Montfort University Insulin Pump Users' Diet and Exercise Survey

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Dear Participant

Our research group in the School of Pharmacy at De Montfort University are working to produce a medical device that might help people with diabetes maintain the right level of glucose in their blood.

One of the ways we can investigate this is to examine the response to ordinary exercise in the diabetes person.

We would therefore like to invite you to take part in this survey because you have either Type 1 or Type 2 diabetes and use an insulin pump. It is an opportunity for you to discuss your experience with various aspects of your diabetes and your attitudes with exercise. The information we get from this survey will be combined with a practical study we will also be conducting which may lead to recommendations to improve the lifestyle of people with diabetes in the future. The information could also help research toward a suitable exercise regime for people with diabetes.

All information collected about you during the course of the survey will be strictly confidential and we will not ask for any personal details.

If you have any questions then please contact us.

Thank you very much for your time.

Yours sincerely

MJ Taylor Professor of Pharmaceutics 0116 2506317 mjt@dmu.ac.uk

Mohamd Alblihed PhD student p06004947@myemail.dmu.ac.uk

THIS SURVEY CAN BE FILLED IN ELECTRONICALLY BUT IF YOU PREFER, YOU CAN PRINT THE SURVEY, FILL IT IN MANUALLY AND THE ADDRESS LABEL ON THE BACK PAGE CAN BE USED

NO STAMP NEEDED IF MAILED FROM THE UK

Section A: Background information

1. A	Are you?				
0	1- Female		C 2- Male		
2. A	Are you?				
0	1- Professional	0	3- Semi- skilled	0	5- Student
0	2- Skilled	0	4- Manual labour	0	6- Retired
0	7- Other (please specify)				

3- Between 21-30 years	2- Between 11-20 years	ed?	8- Over 80 years 7- Between 61-80 years 8- Over 80 years education as a mature student
- How old were you when your diabetes was first diagnosed? 1 - Between 1-10 years	- How old were you when your diabetes was first diagnosed? 1 - Between 1-10 years	ed?	7- Between 61-80 years 8- Over 80 years education as a mature student
How old were you when your diabetes was first diagnosed? 1. Between 1-10 years 4. Between 31-40 years 5. Between 11-20 years 6. Between 41-50 years 6. Between 51-60 years Please state your weight and height Height	How old were you when your diabetes was first diagnosed? 1. Between 1-10 years 4. Between 31-40 years 5. Between 11-20 years 6. Between 41-50 years 6. Between 51-60 years Please state your weight and height Height	© ©	7- Between 61-80 years 8- Over 80 years education as a mature student
1- Between 1-10 years	1- Between 1-10 years	© ©	7- Between 61-80 years 8- Over 80 years education as a mature student
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Please state your weight and height Height	Please state your weight and height Height	I time	education as a mature student
Please state your weight and height Height	Please state your weight and height Height		
Weight	Height		
2-I underwent some form of educational training (e.g. C 5-I have not had any formal education rocational or college) 3-I am in or have had a higher education (e.g. university) 6-Other (please specify) 7-What is your ethnic group? 1-White British C 6-Mixed, White and Asian C 11-Any other Asian background 2-White Irish C 7-Any other mixed background C 12-Black or Black British, Caribbear 3-Any other White background C 8-Asian or Asian British, Indian C 13-Black or Black British, African 4-Mixed, White and Black Caribbean C 9-Asian or Asian British, Pakistani C 14-Any other Black background C 5-Mixed, White and Black African C 10-Asian or Asian British, Bangladeshi C 15-Chinese	Weight		
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C 5- Mixed, White and Black African C 10- Asian or Asian British, Bangladeshi C 15- Chinese	C 5- Mixed, White and Black African C 10- Asian or Asian British, Bangladeshi C 15- Chinese		•
16- Other (please specify)	16- Other (please specify)	O	15- Chinese
3. Which country do you live in?			
			0 0

De l	Montfort University Insulin Pump ปร	ers' Diet and Exercise Survey
9. I	If you are from the UK, who provided your p	ump?
0	1- My pump was provided free through by the NHS	
0	2- My pump infusion sets were provided by the NHS	
0	3- I paid for my pump.	
0	4- I paid for my pump infusion sets	
0	5- Other please state	
Sec	ction B: Diabetes	
10.	. How was your diabetes first discovered?	
0	1- By my GP	4- By ambulance/ A&E (Accident and Emergency)
0	2- By hospital clinic	5- By myself
0	3- By friend/ family	6- By medical check-up (work, insurance)
0	7- Other (please specify)	
11.	. What type of diabetes do you have	
0	1- Type 1	
0	2- Type 2	
0	3- I don't know	
0	4- Other (please specify)	
12.	. Is there a history of diabetes in your family	?
0	1- No	
0	2- If yes please state who	

De Montfort University Insulin Pump Users' Diet and Exercise Survey 13. What was your HbA1c when you were diagnosed with diabetes? (if known)

1- Don't know 2- Below 5 % (31 mmol/mol) 3- Between 5.1 and 6 % (31 and 42 mmol/mol) 4- Between 6.1 and 7 % (43 and 53 mmol/mol) 5- Between 7.1 and 8 % (54 and 64 mmol/mol) 6- Between 8.1 and 9 % (65 and 75 mmol/mol) 7- Between 9.1 and 10 % (76 and 86 mmol/mol) 8- Over 10.1 % mmol/mol, please state What was your HbA1c average bef 1- Don't know 2- Below 5 % (31 mmol/mol) 3- Between 5.1 and 6 % (31 and 42 mmol/mol) 4- Between 6.1 and 7 % (43 and 53 mmol/mol) 5- Between 7.1 and 8 % (54 and 64 mmol/mol)
3- Between 5.1 and 6 % (31 and 42 mmol/mol) 4- Between 6.1 and 7 % (43 and 53 mmol/mol) 5- Between 7.1 and 8 % (54 and 64 mmol/mol) 6- Between 8.1 and 9 % (65 and 75 mmol/mol) 7- Between 9.1 and 10 % (76 and 86 mmol/mol) 8- Over 10.1 % mmol/mol, please state What was your HbA1c average bef 1- Don't know 2- Below 5 % (31 mmol/mol) 3- Between 5.1 and 6 % (31 and 42 mmol/mol) 4- Between 6.1 and 7 % (43 and 53 mmol/mol)
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6- Between 8.1 and 9 % (65 and 75 mmol/mol) 7- Between 9.1 and 10 % (76 and 86 mmol/mol) 8- Over 10.1 % mmol/mol, please state What was your HbA1c average bef 1- Don't know 2- Below 5 % (31 mmol/mol) 8- Between 5.1 and 6 % (31 and 42 mmol/mol) 4- Between 6.1 and 7 % (43 and 53 mmol/mol)
7- Between 9.1 and 10 % (76 and 86 mmol/mol) 3- Over 10.1 % mmol/mol, please state What was your HbA1c average bef 1- Don't know 2- Below 5 % (31 mmol/mol) 3- Between 5.1 and 6 % (31 and 42 mmol/mol) 4- Between 6.1 and 7 % (43 and 53 mmol/mol)
What was your HbA1c average before the above the state average before a series of the state average before average average before average before average average average average before average a
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3- Between 5.1 and 6 % (31 and 42 mmol/mol) 4- Between 6.1 and 7 % (43 and 53 mmol/mol)
4- Between 6.1 and 7 % (43 and 53 mmol/mol)
5- Between 7.1 and 8 % (54 and 64 mmol/mol)
6- Between 8.1 and 9 % (65 and 75 mmol/mol)
7- Between 9.1 and 10 % (76 and 86 mmol/mol)
3- Over 10.1 % mmol/mol, please state
What is your average HbA1c now t
1- Don't know
2- Below 5 % (31 mmol/mol)
3- Between 5.1 and 6 % (31 and 42 mmol/mol)
4- Between 6.1 and 7 % (43 and 53 mmol/mol)
5- Between 7.1 and 8 % (54 and 64 mmol/mol)
6- Between 8.1 and 9 % (65 and 75 mmol/mol)
7- Between 9.1 and 10 % (76 and 86 mmol/mol)
3- Over 10.1 % mmol/mol, please state

De Montfort University Insulin Pump Users' Diet and Exercise Survey 16. What do you think your HbA1c should be? 1- Don't know C 2- Below 5 % (31 mmol/mol) 3- Between 5.1 and 6 % (31 and 42 mmol/mol) 4- Between 6.1 and 7 % (43 and 53 mmol/mol) 5- Between 7.1 and 8 % (54 and 64 mmol/mol) 6- Between 8.1 and 9 % (65 and 75 mmol/mol) 7- Between 9.1 and 10 % (76 and 86 mmol/mol) 8- Over 10.1 % mmol/mol, please state 17. In the last 12 months, have you had any of the following tests? No Don't know 1- Your blood pressure taken by a doctor or nurse. 2- A cholesterol test by a doctor or nurse. 3- An eye test where a photograph of the back of your eyes was taken. 4- Your bare feet were examined. 5- You have had your weight checked by a doctor or nurse. 18. For each question of the following please tick yes, no or Don't know Don't Yes know 1- Has your eyesight suffered as a consequence of your diabetes? 0 2- Do you have diabetic kidney disease? 3- Do you require dialysis? 0 0 0 4- Have you had a kidney transplant? 5- Is your blood pressure usually normal? 6- Do you take any medication to control your blood pressure? 7- Are you on lipid lowering medication (for high cholesterol or triglycerides)? 8- Have you ever had a heart attack? 0 9- Do you ever have chest pain due to angina? 10- Have you ever had heart bypass surgery (coronary artery bypass)? 11- Have you ever had a balloon angioplasty or a coronary stent placed? 12- Have you ever had, or suspected that you had a stroke? 19. Please tell us what your cholesterol levels are, if known? 1- Total cholesterol level 2- Low-density lipoprotein (LDL) cholesterol (if known) 3- High-density lipoprotin (HDL) cholesterol (if known)

Your insulin Pump

De Montfort University Insulin Pump Users' Diet and Exercise Survey

20.	What kind of insulin pump do you use?		
0	1- Medtronic Paradigm		
0	2- Roche		
0	3- Animas		
0	4- Smiths Medical – Cozmo		
0	5- Accu-Chek Spirit		
0	6- Other, please state		
21.	How many years have you been using a p	pu	mp?
0	1- Less than 1 year	0	3- Between 3 and 5 years
0	2- More than 1 year and less than 3 years	0	4- More than 5 years
22.	What kind of insulin do you infuse into yo	ur	pump?
0	1- Humalog® (Lispro)	0	3- Actrapid® (regular or soluble insulin)
0	2- Novorapid® or Novolog® (Aspart)	0	4- Humulin S® (regular or soluble insulin)
0	5- Other, please state		_
23.	Typically, what are your basal rates throu	ıgŀ	out a non-exercise day?
0	1- Less than 0.5 Unit/hr	0	3- Between 1 Unit/hr and 2 Unit/hr
0	2- Between 0.5 Unit/hr and 1 Unit/hr	0	4- More than 2 Unit/hr
24.	How do you bolus for meals on a non-exe	erc	ise day?
0	1- Standard bolus (Spike)	0	3- Combination bolus (Spike and Square wave)
0	2- Extended bolus (Square wave)	0	4- Super bolus (Increased spike)
0	5- Other, please specify		
25.	What was the total amount of insulin you	ty	pically use on a non-exercise day?
0	1- Less than 20 Units	0	4- Between 41Units and 50 Units
0	2- Between 21Units and 30Units	0	5- Between 51Units and 60 Units
0	3- Between 31Units and 40 Units		
0	6- More than 61 Units, please state		-

De Montfort University Insulin Pump Users' Diet and Exercise Survey 26. How many times do you test your blood glucose on a non-exercise day? 4-6 times 1-3 times More than 6 times 27. Typically, what are your basal rates throughout an exercise day? 1- Less than 0.5 Unit/hr O 3- Between 1 Unit/hr and 2 Unit/hr C 2- Between 0.5 Unit/hr and 1 Unit/hr 6 4- More than 2 Unit/hr 5- Any addition information 28. How do you bolus for meals on an exercise day? C 1- Standard bolus (Spike) C 3- Combination bolus (Spike and Square wave) C 2- Extended bolus (Square wave) 4- Super bolus (Increased spike) 5- Other, please specify 29. What is the total amount of insulin you typically use on an exercise day? 1- Less than 20 Units C 4- Between 41 Units and 50 Units C 2- Between 21 Units and 30 Units C 5- Between 51 Units and 60 Units C 3- Between 31 Units and 40 Units 6- More than 61 Units, please state 30. Do you use a pre-exercise bolus? ① 1- No C 2- Yes, please state how much 31. What is an acceptable blood glucose for you before exercise? C 1- Below 4 mmol/l (72 mg/dl) C 2- Between 4-7 mmol/l (72-126 mg/dl) C 3- Above 7 mmol/l (126 mg/dl) 32. How does exercise change your blood glucose? C 2- Decrease your blood glucose C 3- No change 1- Increase your blood glucose 33. How many times do you test your blood glucose on an exercise day? C 1-3 times 4-6 times More than 6 times

De Montfort University Insulin Pump Users' Diet and Exercise Survey 34. If your blood glucose was less than 4mmol/L (72 mg/dl) pre-exercises, what would you do? C 1- Miss out your pre-exercise bolus 4- Take some carbohydrate then exercise C 2- Reduce your pre-exercise bolus 5- Nothing 3- Leave out exercise today 7- Other, please state 35. If you experienced hypoglycemia (low blood glucose) after exercise what action would you take? C 1- Re-check your blood glucose 2- Eat or drink carbohydrate C 3- Other (please specify) **Section C: Exercise** 36. How important is participating in sport and exercise to you? 1- Important C 2- No view 3- Not important 37. Have you always led an active exercise lifestyle? ☐ 1- Yes 4- No, but I have started now 2- No 5- Please explain how 3- Yes, but I have stopped now Please explain how 38. Typically what is your blood glucose value pre-exercise? 1- Do not know C 2- Below 5 mmol/l (below 90 mg/dl) 3- Between 5.1 and 6 mmol/l (91-108 mg/dl) 4- Between 6.1 and 7 mmol/l (109-126 mg/dl) 5- Between 7.1 and 8 mmol/l (127-144 mg/dl) © 6- Between 8.1 and 9 mmol/l(144-162 mg/dl) 7- Between 9.1 and 10 mmol/l (163-180 mg/dl) O 8- Over 10 mmol/l, (over180 mg/dl) please state

Please tick (✓) appropriate	JOX	V No
s your pump switched on during exercise?		Yes No
o you have any pump problems during exerci	se? If yes, please explain below	0 0
anation		
If you don't switch your pur	mp on during exercise, do any	of the following apply?
1- You are not sure about the pump sensitiv	ity during exercise	
2- You are worried about discomfort		
3- You worry that your blood glucose goes u	p to abnormal level (hyperglycemia)	
4- You worry that your blood glucose goes of	lown (hypoglycemia)	
5- Interferes with exercise program		
6- Advised by medical professional to switch	n pump off during exerecise	
7- Other		
How much exercise did you	ı participate in before you staı	rted your pump therapy
1- None	C 3- Between 1-3 hour	s a week
2- Less than 1 hour a week	C 4- More than 3 hours	s a week
Has this changed since you	u have been on your nump?	
1- No	a nato acon en jour pamp.	
2- Yes, please state		
What would you say the lev	el of intensity is when you exe	ercise?
	less it's a hot, humid day, no noticeable change	in breathing patterns.)
1- Light (Easy, does not induce sweating un	3	
	bout 10 minutes of exercise. Breathing becomes	deeper and more frequent.)
	bout 10 minutes of exercise. Breathing becomes	deeper and more frequent.)
2- Moderate (Somewhat hard, sweat after a	bout 10 minutes of exercise. Breathing becomes eathing is deep and rapid.)	deeper and more frequent.)
2- Moderate (Somewhat hard, sweat after a 3- Heavy (Hard, sweat after 3-5 minutes. Bre	bout 10 minutes of exercise. Breathing becomes eathing is deep and rapid.)	deeper and more frequent.)
2- Moderate (Somewhat hard, sweat after a3- Heavy (Hard, sweat after 3-5 minutes. Bre4- Combination between low and moderate	bout 10 minutes of exercise. Breathing becomes eathing is deep and rapid.)	deeper and more frequent.)
 2- Moderate (Somewhat hard, sweat after a 3- Heavy (Hard, sweat after 3-5 minutes. Bree 4- Combination between low and moderate 5- Combination between low and high. 	bout 10 minutes of exercise. Breathing becomes eathing is deep and rapid.)	deeper and more frequent.)
 2- Moderate (Somewhat hard, sweat after a 3- Heavy (Hard, sweat after 3-5 minutes. Bree 4- Combination between low and moderate 5- Combination between low and high. 	bout 10 minutes of exercise. Breathing becomes eathing is deep and rapid.)	deeper and more frequent.)

De Montfort University Insulin Pump Users' Diet and Exercise Survey 44. Typically, what type of exercise do you do? 1- Aerobic exercise (e.g. walking, cycling, jogging and swimming) 2- Anaerobic exercise (e.g. resistance training and weight lifting) C 3- A mixture of aerobic and anaerobic 4- Other please state 45. Which of the following do you participate in (please select all that apply) ☐ 3- Weight training (resistance exercise) ☐ 5- Team sports basketball/football ☐ 1- Walking 2- Cycling 4- Swimming 6- Running 7- Other please state 46. Are there any barriers preventing you from taking part in more sport? 1- Health reasons 6- It does not interest me 2- Lack of motivation 7- It is too expensive 3- Embarrassment about how I look eg overweight or fitness 8- Lack of transport lack 9- Fear of injury 4- You doubt it will lead to weight control 10- Don't know 5- Lack of time 11- Other (please specify) 47. Typically, how many days in the week do you undertake physical activity? Every day 3-5 days 1-2 days 6 days 48. In a typical exercise session how long do you spend participating in sport or exercise? 1- Less than 30 minutes. C 3- From 1 to 2 hours. 5- From 3 to 4 hours. 2- From 30 to 1 hour. 4- From 2 to 3 hours. 6- More than 4 hours. 49. How many times do you exercise per day? Once Three times. Twice More than 3 times.

	Eff	ective	No change	Detrimental	Comments
- Better general health		0	O	0	0
- Low HBA1c		0	0	0	0
B- Better blood glucose control		0	0	0	0
- Fewer hypoglycemia events		0	0	0	0
5- Fewer hyperglycemia events		0	0	0	0
1. Where do you typically exercise?					
C 1- At school/ college/ work/ university	C 4-	Gym			
C 2- In a sports team (e.g. football, netball)	C 5-	On your	way home or scho	ool.	
O 3- In a class or club (e.g. aerobics, dance, etc)	C 6-	Don't kno	w		
O 7- Elsewhere, please state					
			4		
2. Are you a member of any sport centr	e or phys	ical ac	ctivity grou	p?	
 1. Yes 3. Which of the following factors influentlease tick all that apply 1- To keep well with your diabetes 	☐ 6- —	decis	articipate in sport		port?
3. Which of the following factors influer lease tick all that apply	nced your	Family pa	articipate in sport friends do it you enjoy it		port?
3. Which of the following factors influence lease tick all that apply 1- To keep well with your diabetes 2- Better control of your blood glucose 3- Better for HbA1c value 4- To improve health and fitness	nced your	Family pa Because Because	articipate in sport friends do it you enjoy it e stress		
3. Which of the following factors influence lease tick all that apply 1- To keep well with your diabetes 2- Better control of your blood glucose 3- Better for HbA1c value 4- To improve health and fitness 5- Weight loss 4. How often do you climb the stairs at	nced your 6- 7- 8- 9-	Family pa Because Because	articipate in sport friends do it you enjoy it e stress e over the		
3. Which of the following factors influence lease tick all that apply 1- To keep well with your diabetes 2- Better control of your blood glucose 3- Better for HbA1c value 4- To improve health and fitness 5- Weight loss 4. How often do you climb the stairs at lease tick one	nced your 6- 7- 8- 9-	Family paragraph of the	articipate in sport friends do it you enjoy it e stress e over the		
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56. How often do vou s	uffer with hypoglycaemia du	ing a week?
C 1- None	O 3-Two	
C 2- One	O 4- Moi	e than3
57. Has exercise incre	ased or decreased the hypogl	ycaemia you have?
C 1- Increase	C 2- Decrease	C 3- No effect
58. Do you experience	hypoglycaemia while exercis	ing?
C 1- Always	© 3- Rar	ely
C 2- Frequently	C 4- Nev	er
59. How many times pe	er week is your measured fast	ing blood glucose 10 mmol/L (180
ng/dl) or above?		
C 1- Once	O 3- Mor	e than twice
C 2- Twice	○ 4- Nev	er
60. What do you do if y	our blood sugar is over 10mn	nol/L (180mg/dl)?
1- Reduce the insulin rate	C 4- Drir	k water or any drink with low calories
1- Reduce the insulin rate2- Increase the insulin bolus		k water or any drink with low calories
	C 5- See	
2- Increase the insulin bolus3- Wait for the blood glucose t	○ 5- See	
2- Increase the insulin bolus3- Wait for the blood glucose t	○ 5- See	ek medical help
2- Increase the insulin bolus3- Wait for the blood glucose t61. Have you ever expense	○ 5- See	ek medical help
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 2- Increase the insulin bolus 3- Wait for the blood glucose t 61. Have you ever expe 1-Yes 2- No 3- Don't know 	○ 5- See	ek medical help
2- Increase the insulin bolus 3- Wait for the blood glucose t 61. Have you ever expe 1-Yes 2- No 3- Don't know	○ 5- See	s since you started to exercise?
2- Increase the insulin bolus 3- Wait for the blood glucose t 61. Have you ever expe 1-Yes 2- No 3- Don't know	o reduce	s since you started to exercise?
2- Increase the insulin bolus 3- Wait for the blood glucose t 61. Have you ever expe 1-Yes 2- No 3- Don't know 62. How many calories	o reduce erienced diabetic ketoacidosis to do you think you eat and drir	s since you started to exercise?
2- Increase the insulin bolus 3- Wait for the blood glucose t 61. Have you ever expe 1-Yes 2- No 3- Don't know 62. How many calories 61. How many calories 62. How many calories	o reduce Perienced diabetic ketoacidosis do you think you eat and dring 4- Over 2500 up to 3000	s since you started to exercise?
2- Increase the insulin bolus 3- Wait for the blood glucose t 61. Have you ever experiments 1-Yes 2- No 3- Don't know 62. How many calories 1- 1500 or less 2- Over 1500 up to 2000 3- Over 2000 up to 2500	o reduce crienced diabetic ketoacidosis do you think you eat and drir 4- Over 2500 up to 3000 5- Over 3000 up to 3500 6- 3500 or more	s since you started to exercise?

De Montfort University Insulin Pump Users' Diet and Exercise Survey 64. Do you eat special diabetic food/ drink? ① 1- No C 2- Yes, please list and state why 65. Which of these are important to you? 1- Reducing fat in diet 4- Eating more healthy C 2- Reducing body weight 5- Reducing your HbA1c value 3- Staying motivated 6- Others, please state 66. Do you see a dietician? 1- Frequently 2- Regularly 3- Never 67. Do you follow a medically approved dietary programme? ① 1- No 2-Yes (please specify) 68. How would you describe your diet approach? C 1- Your eating habits are healthy 2- You are too busy to find healthy foods or meals 3- You don't know enough about good nutrition or how to eat healthily 4- Sometimes, you try to eat healthy food 5- You can't resist junk food 6- Your eating habits are poor 69. What other factors affect your eating habits? 1- Your parents and/or family don't eat healthily. O 2- Your school / work don't offer healthy choices at lunch or mealtimes O 3- You and your friends are always going out to eat and socializing over food and you end up eating lots of junk food. O 4- You really don't feel like it's worth it or have the motivation to try to change your habits. 5- You eat a healthy diet 6- Other please state

1- Yes	O	2- No	0	3- Yes, but not on an exercise da
Do you amaka a	VOIII AVAIA	co dove?		
Do you smoke on 1- Do not smoke	your exerci	se uays f		
2- Yes, please state how ma	any per day			
	u ever too ur	iwell or stressed to O 3- Rare		•
1- Frequently 2- Sometimes		C 3- Rare	ery	
4- Other (please specify)				
Have you experie	nced any of	the following sympt	toms afte	exercise?
1- Bleeding	0	5- Hyperthermia	0	9- Urinary (colour,blood,pain)
2- Chafing	0	6- Muscle cramps	0	10- None
3- Flushing	0	7- Red face		
4- Hives	0	8- Shortness of breath		
11- Other				
Please write any	comments y	ou would like to add	i	
•				A
				V
				Y
				Y
				Y
				Y
				Y

De Montfort University Insulin Pump Users' Diet and Exercise Survey

Label for envelope [if you decide to print and post free from UK, instead of sending electronically]

