
The Holiday
Health Report
2013

Revealed: how holidays help you live longer



Revealed: how holidays help you live longer

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Jay Brewer, Professional Head of Physiology, Nuffield Health said:

"The holiday should be used to rest and recover but also to gain perspective and plan. The health assessment should be used to focus on the most important things and decide where to make changes for the better."

"The control group only saw an improvement in one area (but still not as much as the holidaymakers) - in their blood glucose levels and this was probably through dietary changes and exercise. We would expect to see some longer-term improvements if they carried on implementing these things."

Christine Webber, psychotherapist said:

"This study shows that holidays not only feel good, but that they actually help us to be healthier."

People returning to work after a holiday are often told by their colleagues, 'You look well!' But is this really true - do holidays have an impact on your health, beyond a tan that quickly fades? For the first time Kuoni Travel and Nuffield Health have clinically measured the health benefits of a break - to provide an objective assessment of the improvements to wellbeing generated by a holiday.

Nuffield Health and psychotherapist Christine Webber, carried out a series of clinical and psychotherapeutic tests in order to develop for the first time an accurate picture of how getting away from it all can influence a whole series of key health indicators - blood pressure, ability to recover from stress, quality of sleep and, of course, emotional health.

We took 12 people and gave them full health assessments and psychological tests. We also asked them to wear heart monitors. We gave them lifestyle and dietary advice.

We then sent half the group on holidays to either Thailand, Peru or the Maldives. The other half of the group stayed at home.

Two weeks after the holidaymakers returned, both groups had more medicals, psychological tests and wore heart monitors for several days.

Our study showed that the holidaymakers' ability to recover from stress, their sleep quality and their blood pressures were significantly improved compared with the group who had not had a holiday.

- › **Resilience to Stress:** The holidaymakers' ability to recover from stress improved by 29 per cent while that of the group that did not travel went down by 71 per cent.
- › **Sleep:** The holidaymakers' sleep quality improved by 34 points. Stay-at-homers' slumped 27 points.
- › **Blood Pressure:** Having a holiday resulted in an average blood pressure reduction in the holidaymakers' group of six per cent. In comparison the average blood pressure of the people who didn't have a holiday went up by two per cent. Stress can result in blood pressure rises leading to increased risk of stroke and heart attacks.

Other holidaymaker improvements included:

- › Decreases in blood glucose levels, reducing risk of diabetes.
- › Improved body shape (losing weight around their middles) which may lower risk of heart disease and diabetes.
- › Improved energy levels and mood.

How a holiday improves your body and mind

1 Brain & nervous system

– may improve your mood, concentration and sleep.

2 Heart

– may lower your blood pressure and so decrease risk of heart attack and stroke.

3 Adrenal glands

– may reduce production of fat-storage hormone cortisol and decrease risk of diabetes and heart disease.

4 Gastrointestinal system

– may increase absorption of key vitamins which may make you feel more energised.

5 Bones

– sun can increase your vitamin D intake which is needed for healthy, strong bones.

6 Reproductive system

– lowering stress hormone cortisol production may improve your fertility and improve your libido.

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It was time to put some meat on the bone about the holiday feel-good factor



Here are the key findings of the report:

STEVE (58) – Blood pressure reduced, quality of sleep improved (which could lead to better weight management), stress levels went down. His mood improved and energy levels increased.

HILARY (47) – Hilary had hypertension (diagnosed high blood pressure) and this saw a big drop which could lower her risk of heart attack. Her stress levels went down and her blood glucose levels went from being elevated to a healthy level which could lower her risk of diabetes.

THE MATCHED CONTROLS FOR STEVE AND HILARY – MR B AND MRS A:

MR B'S stress rocketed, his sleep quality plunged and his liver enzymes on his blood test were raised indicating he may be drinking more than is healthy.

MRS A'S stress levels went up, her sleep went down and her mood and energy remained stable.

BEN (30) – Blood pressure came down, mood and energy levels improved.

STACY (29) – Enjoyed the social life of the volunteer holiday but said the noise of the boat's generator disturbed her sleep. This is reflected in her results.

MATCHED CONTROLS FOR BEN AND STACY – MR N AND MS M:

MR N – His mood and energy levels went down.

MS M – Her stress and sleep levels remained the same.

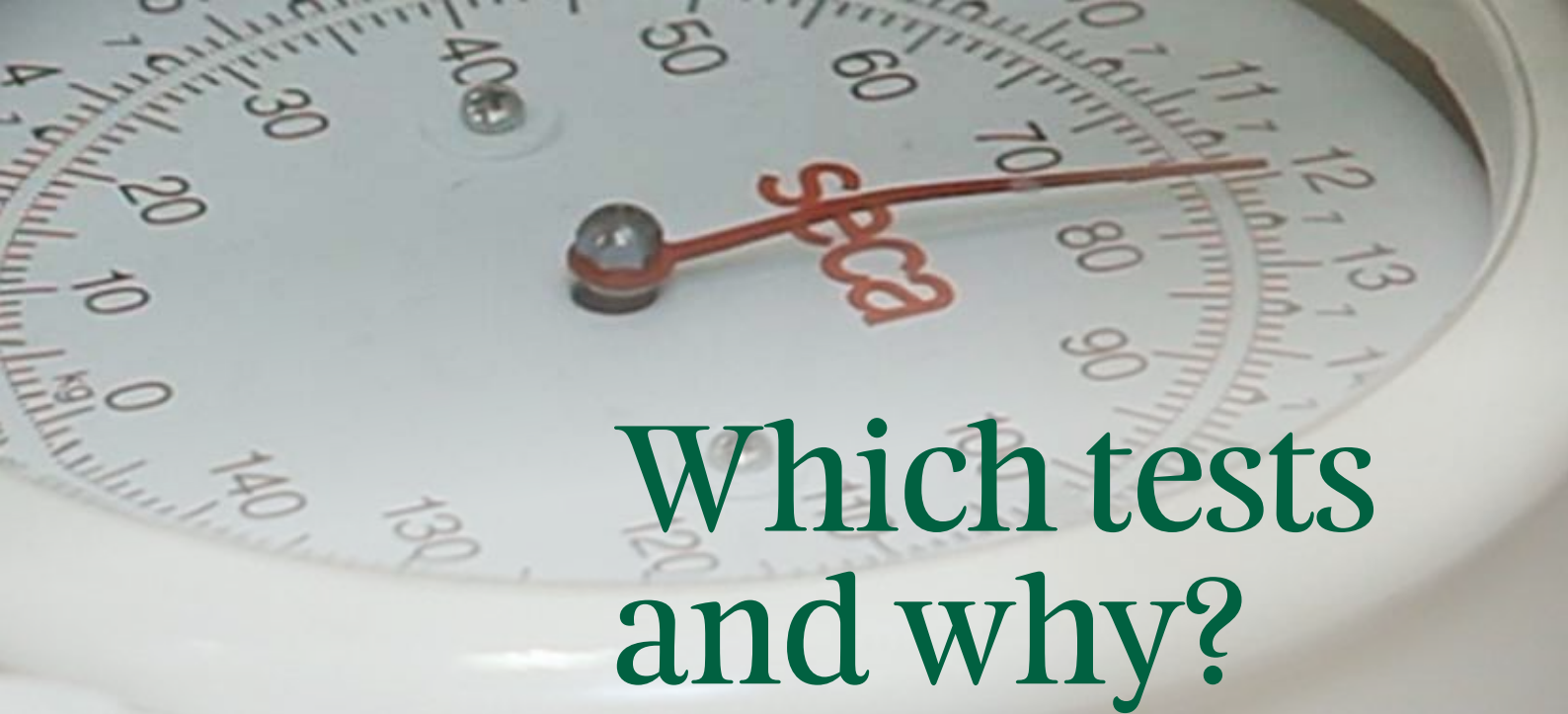
SARAH B (46) – Her sleep, mood and energy levels improved. However despite her stress levels going down on holiday, they went above pre-holiday levels within a fortnight of getting home.

SARAH D (53) – Stress went down, her sleep improved, her mood and energy went up, her blood pressure went down. Her waist/hip ratio measurement and her blood glucose results improved which may reduce her risk of diabetes.

MATCHED CONTROLS FOR SARAH B AND SARAH D – MS Y AND MS X

MS Y – Little variation in stress, mood and energy levels.

MS X – Stress went up and mood and energy levels went down.



Which tests and why?

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We chose tests that were replicable with good reliability



We chose a variety of tests to assess the stress levels of all participants which consisted of six travellers and six controls (those who didn't travel). We wanted to measure what was happening to their bodies and minds. The tests needed to be replicable - so that if someone else came along and did the same tests, there was no difference in the methodology. We were also looking for tests with good reliability. Hence we used the following:

Heart Rate Variability: Participants were asked to wear a small heart monitor for 72 hours before the holiday, during the holiday and after the holiday.

The control group, who didn't have a holiday, were asked to wear the heart monitor for 72 hours in a two-week period and then another 72 hours in another two-week period and a third time in another 72-hour period. The holiday participants wore the monitor for the same three days of the week. For example, if they had a Monday to Friday job, the heart monitor was worn Tuesday - Thursday before the holiday. Then if on holiday, they wore the monitor Tuesday - Thursday on holiday and the same day pattern when they came back.

Readings of the subjects' heart rate fluctuations were determined from the monitor. Changes in heart rate were used to see when the subjects' sympathetic (the stressed) or parasympathetic (relaxed) nervous systems were working.

The sympathetic nervous system, often referred to as the 'fight or flight' system, comes into play when we are under stress - originally designed to help us run from danger such as a sabre-toothed animal. However, in 21st century life, our sympathetic nervous systems can be overused (eg traffic jams, deadlines etc). The parasympathetic nervous system is known as the 'rest and digest' system and comes into play when we are relaxing and enables our body to digest our food well and recover and repair itself.

Why use a Heart Rate Variability (HRV) test?

By testing our participants' HRV we can determine how much of their time over a 24-hour period is spent:

- ▶ in a physiologically stressed state.
- ▶ how much time is spent in a physiologically relaxed or recovery state.
- ▶ insight into not just the duration of sleep but the quality.
- ▶ how resilient they are to stress when they do experience it.

All participants were also given a **Nuffield Health 360+ Health Assessment** which involved a full medical check over by a doctor and lifestyle, fitness and dietary advice from a Health and Wellbeing Physiologist based on the results. All subjects attended two of these medical assessments. The holidaymakers in the fortnight before their holiday and again two weeks after the holiday. The non-holidaymakers had a 360+ medical in the summer and then a follow up a month later in September.

The **Nuffield 360+ Health Assessment** included analysis of subjects' Body Mass Index; waist/hip ratio; cholesterol; blood glucose; full blood profile and blood pressures. Their levels of hydration, alcohol units, caffeinated drinks, hours of sleep, nutritional status and aerobic fitness were also examined.

Jay Brewer, Professional Head of Physiology, Nuffield Health said: *"Blood pressure levels can be affected by stress which may increase your long-term risk of diseases such as heart disease. Your weight/hip ratio is important, because the more barrel-shaped you are, the more likely you may be exposed to risk of diabetes. Blood glucose levels can give a quick snap shot of diabetes risk."*

"We also assessed the food diary for macronutrients - the balance between carbohydrates, fat and protein and matched these against government guidelines. People tend to go towards higher fat foods and quick-release simple sugars when they are stressed. Under stress the body tends to tell us to do all the worst things for us. Subjects were given dietary advice following a review of their food diary."

Psychological tests: Our psychotherapist Christine Webber, devised a mood and wellbeing inventory for the Holiday Health Experiment which was filled out by all participants. The holiday-makers completed three sets of mood diaries: one set for 14 days prior to the holiday, a further set during their holiday, and the final set when they had been back in the UK for at least a fortnight. The control group kept two sets of diaries, at least one month apart. The self-reporting system contained 25 questions per day relating to mood, stress, energy levels and sleep patterns, food intake and libido. Participants had to assess their mood and energy levels three times a day and overall stress once a day. All 12 participants also underwent a couple of one-to-one counselling sessions with Christine Webber.

Christine Webber said: *"Mood diaries are commonplace in psychotherapy. By filling them out, patients can monitor their progress - and see a pattern to their thoughts, moods and stress levels. Of course this sort of self-reporting is subjective. For example, some individuals will regard long and busy days as extremely stressful. Others - perhaps those excited about setting up their own businesses - will see such days as productive and stimulating. In other words, people analyse their moods and stress in their own personal way. Interestingly over this period, the Olympic Games seemed to have a very positive and collective effect on elevating people's moods."*



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The sense of being stressed is dependent upon how the individual perceives it



ABOUT CHRISTINE WEBBER, PSYCHOTHERAPIST

Christine Webber is a psychotherapist, writer and broadcaster. She has a practice in Harley Street where she sees clients with various difficulties including, anxiety, eating disorders, and problems connected with work/life balance or relationships. She frequently appears on TV as an expert on programmes such as BBC Breakfast and Channel 5's The Wright Stuff. She also writes regularly for the health pages in national press and for two websites: www.netdoctor.co.uk and www.TheSite.org. She has written 11 books including *How to Mend a Broken Heart* and, most recently, *Too Young to Get Old*, which is an inspirational guide for today's dynamic female baby boomer.

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Under stress the body tends to tell us to do all the worst things for us



ABOUT JAY BREWER, PROFESSIONAL HEAD OF PHYSIOLOGY, NUFFIELD HEALTH

Jay has worked with Nuffield Health for more than four years since graduating from Chester University with a 1st class MSc in Exercise and Nutrition Sciences. During his studies at Chester University Jay also worked as a Dietetic Assistant at the Countess of Chester Hospital and undertook additional modules in biochemistry which has led to his passion for nutrition in health. This was quickly noted by Nuffield Health and Jay was appointed as the Nutritional Expert for Physiology. Over the last two years Jay has been influential in launching and establishing the new breed of 'integrated' fitness and wellbeing sites for Nuffield Health. These multi-practitioner sites provide a fitness offering combined with clinical services such as nutritional therapy, physiotherapy, private GP and clinical health screening with a physiologist. Recently Jay has been appointed Professional Head of Physiology and is responsible for the development of physiology as a whole. Overall, Jay's philosophy is that health and wellbeing is a multifaceted issue that involves long-term change and for us to be truly 'healthy' we must aim for optimum health and wellbeing rather than just avoiding ill health.

Our chosen holidays...

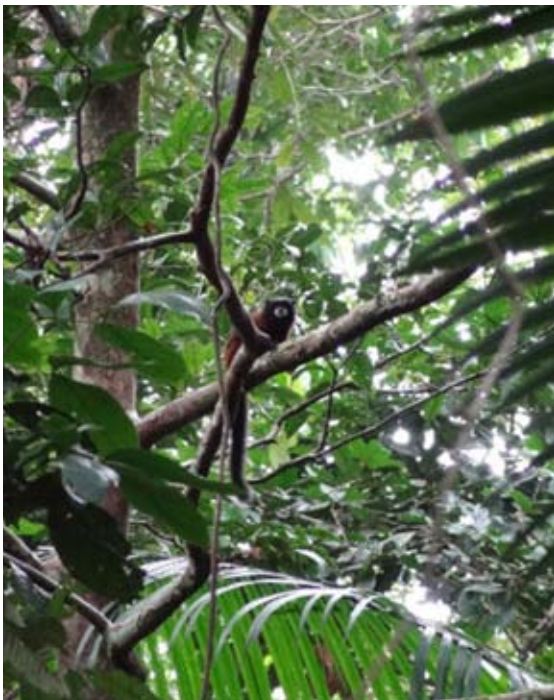
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The holidays we road-tested and why?

Would doing something completely different have a beneficial impact on wellbeing?

We wanted to see if certain types of holiday might have more impact, or less impact, on one's psychological and physical well-being. Hence we picked three completely different types of holidays to send our subjects on. Anecdotally it has been noted that an adventure holiday to a far-flung location can take us away from our own problems. Immersing oneself in a new culture, food and way of life can put one's own life in perspective while providing plenty of new stimulation to the mind. Navigating a map with your partner or buying food in a foreign market stall may be a bonding experience.

Other holidaymakers tell us they like to do something useful with their time away which is why we included a volunteer holiday. We were interested to see if doing something completely different from the normal routine and being useful at the same time would have a beneficial impact on our participants' wellbeing? We also included a fly and flop holiday in our experiment. Just turquoise blue water, warm weather and barefoot luxury on white sands on a far-flung island - would this help our subjects mentally and physically? Would our subjects be able to switch off and relax? Would the mind stop whirring?



The adventure holiday in Thailand

Hilary and Steve travelled with Kuoni on the **'Ancient Thailand'** tour with a guide escorting their small group. They visited the ancient Thailand Kingdoms of Ayutthaya and Sukhothai, the Bridge over the River Kwai, Chiang Mai, Chiang Rai and Mae Sai in the far north. In Bangkok they visited the spectacular Grand Palace and temple of the Emerald Buddha. They took a long-tail boat ride to the floating markets of Damnoen Saduak; and a few days later they journeyed through the ancient teak forests and mountain scenery of northern Thailand. The Ancient Thailand tour is managed by Asian Trails which is a leading inbound tour operator in Asia.



The helping holiday in Peru

Stacy and Ben travelled to the Peruvian area of the Amazon rainforest on a volunteer holiday with not-for-profit eco-tourism organisation **Earthwatch**. They spent two weeks with a group of scientists living on a vintage riverboat. The expedition, starting in Iquitos, involved helping scientists collect data on flora, fauna and wildlife numbers in the Pacayo-Samiria National Reserve. The project was designed to find out how climate change is affecting the biodiversity in that area and so provide information to direct conservation efforts. This meant one day our volunteers would be counting macaws or pink river dolphins and at nights going out in smaller boats spotting caiman crocodiles. This holiday is offered in Kuoni's sustainable travel, intense experience, Ananea collection.

The body flop holiday in the Maldives

Sarah and her friend Sarah travelled to 286-room **Meeru Island Resort & Spa**, on the North Male Atoll in the Maldives in the Indian Ocean. They stayed in a Jacuzzi Water Villa with veranda right over the sparkling, turquoise water and as the name suggests, they had their own Jacuzzi (part of their own private open-sided bathroom). Days would be spent climbing down their own villa's steps to the water to snorkel among tropical fish, exploring the island by bikes, working out and hanging out in the spa which has its own glass floor directly over the ocean where fish swim in full view below. This is a 'no news, no shoes' holiday with sand floor bars and thatched-roofed open-sided restaurants.



The survey & travellers

How we recruited the travellers

We made a call for volunteers to be considered for participation in the Holiday Health Experiment, through articles in national and regional newspapers, radio stations and online media and through email blasts to Kuoni's own database of contacts. This took place in Spring 2012.

We received almost 10,000 replies. Entrants were asked to fill out a questionnaire and asked to write 50 words describing why they needed a holiday. The terms and conditions for entry stated that participants would need to be available at certain dates in summer 2012 to travel; agree to undergo medical and psychological tests and be happy to be included in publicity after the experiment. After T&C adherence was considered, we were left with 3,000 viable entrants.

How we made our final selection

Kuoni researchers then interviewed 150 of these 3,000 people by random selection by telephone to narrow down the selection to 25. We were looking for a wide geographical spread; a variety of age groups and different couple constellations (eg single friends travelling together/married couples/non-cohabitating couples etc). We also sought a wide variety of lifestyles and reasons for wanting to travel as expressed in the 50-word "why I need a holiday" section. From the 25 remaining, we picked three couples who fitted this wide-representative spread.

Researchers from Kuoni matched the three couples to the three different types of sample holidays and entrants travelled as the guests of Kuoni and its partners for free.

Our researchers excluded from the final selection, people who had previously diagnosed medical conditions, as subjects on serious medications could skew results.

The control group who were tested but didn't travel

Once our six travellers (three couples) had been selected, six controls (of three couples) were sought who matched the lifestyles, age group, physical activity, alcohol/caffeine intake of the actual travellers. These controls were found through the Holiday Health Experiment entrants and Kuoni's own database. Controls gave their time for free in return for the same extensive medical and psychological tests offered to the travellers.



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The Coastguards

STEVE DUFF – PERSONAL BIOGRAPHY:

"I am 58 years old and live in a bungalow on Hayling Island. I was born in Paddington London in 1954 and had a happy childhood. I worked for British Telecom leaving in 1995. I have also worked as a police officer, ambulance-man and on ferries and tugs. I have also served in the Territorial Army. I have a daughter, Sarah, who is twenty six years old and lives in Aylesbury. I now work as a Coastguard Officer in Hampshire with the responsibility of managing and training thirty six volunteers. I enjoy working outdoors in a coastal environment. I have many interests but mainly I enjoy collecting. I collect anything that has an interest to me. My small bungalow is bursting at the seams. I enjoy travelling and in recent years I have been to Florida, Turkey, Tunisia and the Battlefields of France."

HILARY DURKAN – PERSONAL BIOGRAPHY:

"I am 47 with four children, daughters of 26 and 24 and sons of 21 and 19. I work for the Maritime and Coastguard Agency as a Coastguard Officer. I have been a Coastguard for four and a half years and love my job. I work with the Coastguard Rescue Teams assisting people in difficulties on our coastline. I volunteer for the RSPCA doing homing visits and I have four cats of my own (borderline mad cat lady). I have always had lots of pets and love animals. I have five tortoises that I have owned for over forty years! I also enjoy archaeology, studying ancient civilisations, visiting historic sites and learning more about our past."



SARAH BASTIDA (PICTURED LEFT) AND HER TRAVELLING COMPANION SARAH DENNING



The Sarahs

SARAH BASTIDA – PERSONAL BIOGRAPHY:

“I am 46 years old. I’m single, and don’t have any children of my own, but have an extended family of four nieces and nephews through my brother and sister. I work for a facilities management company in a global role that involves building a strategic relationship with our clients. This role involves being away from home, travelling to different countries and meeting work colleagues and clients. Away from work, I enjoy spending my social time outdoors rowing on the River Severn that runs less than 200 metres from my house. If I can’t get on the river, I will spend my time cycling, running or visiting the gym. Aside from this, I enjoy spending time with friends, whether it’s at the local pub or restaurant. I’ve also been known to have the occasional visit to the theatre or the opera.”

SARAH DENNING – PERSONAL BIOGRAPHY:

“I am 53 and trained as a midwife when I was 39, having had a ‘light-bulb’ moment when I became a mother, that midwifery was where I was meant to be. I waited 10 years to start my training, until I had finished having my own children and they were all at school. I was married for 23 years to an officer in the armed forces, but have been single for the last six years. I live in a little house in North London that I love. I have three children of my own (two daughters, ages 24 and a teacher and 22 and a scientist) and a son 19 (student engineer having far too much fun at university). My eldest daughter lives at home with me and Tilly, my 5-year-old Jack Russell. I worked in the NHS for several years and now work for myself in the Spire Bushey Hospital and Watford General Hospital in North London, looking after women through pregnancy, birth and the first few days. My working day varies wildly, from days where I’ll just have a few phone calls and queries, I may be running an antenatal clinic with my obstetrician practice partner, teaching parents-to-be about birth and parenthood, looking after a woman through labour, or a mixture of all of the above. My job means that I am on call 24/7. If someone goes into labour at 3am, I go in to hospital, and stay with them until the baby is safely born. This could be a couple of hours or 12! Unpredictability is stressful in itself, as my plans have to be changeable. Luckily I have a circle of fabulous, tolerant friends (of whom Sarah Bastida is one), and as much of a social life as I can manage. I exercise a bit erratically, have good gym equipment at home, which goes through periods of good use and dust-gathering, depending on how knackered I am! I’m generally a positive person, pretty outgoing, but suffer from permanently rigid shoulder muscles and bouts of insomnia, which is not surprising really!”



The Medical Writers

BENJAMIN CLARKE – PERSONAL BIOGRAPHY:

“I’m 30 years old and am originally from High Wycombe in Buckinghamshire. I live in the Peak District with my wife Stacy. We met five years ago when we were both working in Cambridge, and got married September 2011 at St Mawes castle in Cornwall. I currently work for a medical communications agency as a medical writer. I graduated from Warwick University in 2000 with a degree in virology and, after spending a few years working in a lab just outside Oxford, I then moved into writing and editing. I like pretty much all kinds of sports and enjoy playing squash. I also have an interest in wildlife, in particular fish and other aquatic animals. I have a fish tank that I probably spend a bit too much time looking after, and love snorkelling and, more recently, diving.”

STACY YOUNG – PERSONAL BIOGRAPHY:

“I’m 29 years old and originally from Barnsley and over the years have lived in Sheffield, Salisbury and Cambridge, before moving to Derbyshire two years ago as a halfway point between where my husband and I now work. My career to date has been in clinical research. I’ve been working at the University of Sheffield for the last 4 years and before this I worked for the Medical Research Council in Cambridge. Outside of work, I’m totally addicted to Formula 1 (and Jenson Button!), I love going to Iyenga Yoga classes and horse-riding, and try to get out for a few runs when I have a bit of spare energy to burn off. Ben and I got married in September 2011. We’ve got a long wish-list of places we’d love to visit and are trying to get through as many of them as possible in the next few years – well, as much as money and annual-leave constraints will allow us to!”

How would you describe your everyday life?

Time
Pres
52%

Happy
31%

Mundane
7%

Busy
72%

Unpredictable
32%

The questions we asked

- ▶ How would you describe your everyday life?
See percentage boxes for peoples responses.
- ▶ How would you describe your everyday health?
- ▶ When it comes to holidays, how do you think they most impact on your physical and emotional wellbeing?
- ▶ Do I agree that holidays give me a chance to relax?
- ▶ Do I agree that holidays give me a chance to try something new and inspire me?
- ▶ What do you value most about a holiday?
- ▶ How long does it take you to stop thinking/worrying about work once you've started a holiday?
- ▶ Insert a value to the following statement: every pound I spend on buying a holiday is worth xx times to me in terms of wellbeing.

About the entry form

We used the entry form to find out more about British people's attitudes to holidays and health. Each entrant was asked to fill in a questionnaire of eight multiple-choice questions and then tell us in 50 words why they needed a holiday.

The emotional benefits of going away resonated the loudest with our entrants, with 44 per cent saying it enabled them to connect with the person they were holidaying with. Less than ten per cent agreed it gave them time to exercise.

When asked what they valued most about a holiday, the majority stated spending time with loved ones was the biggest priority (30 per cent), while seeing a different culture was important to 18 per cent. Trying new food was a big attraction to just one per cent.

Interestingly, when asked if holidays gave them a chance to relax, Glaswegians valued this highly (76 per cent) while just 56 per cent of southerners in Cardiff and 58 per cent in Plymouth rated it as important.

suared

Exciting
15%

Varied
47%

Sociable
27%

Challenging
50%

Frustrating
33%

Tiring
48%

Lonely
8%

The winning fifty worders

“““

MEDICAL WRITERS, STACY YOUNG (29) AND BEN CLARKE (30) SAID:

We got married in September 2011 and are now at a crossroads with tricky decisions to make about careers, finances, travel and babies. So many big decisions and so little time juggling busy jobs! Time away would hopefully give us a chance to re-connect and get perspective. It would be interesting to see how immersion in a different environment and in different activities will help shape our thinking about our future and our wellbeing, and even the role a holiday has to play in making big decisions.

“““

COASTGUARD OFFICER, HILARY DURKAN (47) SAID:

We work in a challenging environment, always 'on call' and needing to be available for our volunteers 24/7. I love my job but a holiday is the only opportunity I have to switch off and relax. We all need time out and it intrigues me as to how a holiday will make me feel about my everyday stresses and how important a break is to help me deal with them.

“““

MIDWIFE, SARAH DENNING (53) SAID:

Is my wellbeing affected by my work? Absolutely. Helping new life into the world demands 100 per cent, 24/7, as a physical and emotional commitment. There is no room for an 'off-day' as the lives of two people are relying on me. I can't mother new mothers if I don't mother myself. It's a treat to have time to focus on my wellbeing. To make this a girls' holiday where two great friends can chill-out together, not having to worry about make-up and men, is an added bonus!

Couple 1 results:

Steven, 58

His stress levels dropped markedly on holiday and remained low afterwards.

This is what Steve's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days before, during and after his holiday showed:

HEART RATE VARIABILITY			
	BEFORE	DURING	AFTER
STRESS	59%	55%	51%
RECOVERY – ideally above 30%	13%	17%	26%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	-57	-15	+25
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	33%	50%	67%

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"If every result was like this it would be brilliant! We can see overall that both during and after the holiday the amount of time spent stressed has reduced. The resilience to stress result also shows that Steve is coping with the stress placed on his body in a much better way, which has continued to improve even after the holiday finished. The biggest improvements have been made in the quality of his sleep comparing pre holiday to post holiday. I'm pleased about that because there is evidence showing that reductions in sleep duration and quality reduce satiety hormones such as leptin. Research has shown that less sleep or poor sleep may make us crave larger portions from more high sugar and fat sources. Long-term improvement of sleep can have a positive impact on weight and lower risk of common diseases such as diabetes and also heart disease which runs in his family."

And this is what Steve's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS			
	PRE-HOLIDAY	ON HOLIDAY	POST-HOLIDAY
STRESS	4.8 = moderately stressed	2.1 = mildly stressed	2.1 = mildly stressed
MOOD	74	77	85
ENERGY	71	69	80

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Steve's stress levels dropped markedly on holiday – and remained low afterwards. On my second consultation with Steve he was in ebullient mood and was considerably more relaxed. He told me right away that the holiday had changed him. He realised he's "not that old" and "I can still do things". He loved the fact that he and Hilary didn't go all that way just "to sit in a hotel room" and his eyes lit up when talking about hot springs and eating quails' eggs. He reckons his irritability levels have dropped dramatically. His mood improved during the holiday and continued to improve once he got home. There is no doubt that this holiday has proved to be a healthy option for Steve and his partner Hilary."

About the participant



NAME: Steven Duff

AGE: 58

LIVES IN: Hayling Island, Hants

JOB: Coastguard (manager)

BACKGROUND: Steve is in a relationship with Hilary and they work together. He has been married twice before. He has a grown up daughter. Previous careers include merchant navy, police and ambulance service.

WHAT'S HAPPENING TO STEVE: His work is very varied and can range from recovering a fridge at sea to learning to manoeuvre a new rigid inflatable boat. Sometimes he and Hilary must deal with dead bodies. He works long hours including some nights. He lives a short drive from work. He sometimes finds it hard to switch off from work. He sometimes suffers back pain. He also encounters heart burn due to a hiatus hernia. He is allergic to dust mites and pollen and has some arthritis. He doesn't eat fish and drinks only tea and coffee. He recently lost weight from 16 to 14 stone through the Diet Chef diet.

FAMILY HISTORY: Heart attack (father).

HOLIDAY WE SENT HIM ON: Steve went with his partner Hilary on a two-week escorted tour of Thailand.



HOW DOES STEVE FEEL THE TESTS AND HOLIDAY HELPED HIM?

The medical tests from Nuffield made me really aware of the importance of improving my diet – such as drinking more water and taking exercise and the effects these steps could have on my longevity.

The actual trip to Thailand has given me a real desire to experience more adventure rather than just holiday. It also made me try new foods and have new experiences.



WHAT ELSE HAS BEEN HAPPENING WITH STEVE?

STEVE			
	REFERENCE RANGES = HEALTHY LEVELS	BEFORE HOLIDAY	AFTER HOLIDAY
BODY MASS INDEX	18.5–25	28.4 Overweight	28.06
WAIST/HIP RATIO	The lower the difference in number between the waist size and hip size, the higher the risk of diabetes. Barrel shape = diabetes risk.	Very high risk	High risk – IMPROVED result, reduction of 3cm on waist measurement
FASTING BLOOD GLUCOSE	Below 5.8 mmol/L	5.2 mmol/L	4.3 mmol/L
ANY SIGNIFICANT BLOOD RESULTS?	Red and white blood cells are examined for a range of markers.	Uric acid ELEVATED	Not retested
CHOLESTEROL	Below 5 mmol/L	5.5 mmol/L ELEVATED	5.58 – gone up but he only fasted for a third of the time compared to last time which may have influenced increase
BLOOD PRESSURE	120/80 mmHg or less = optimal	118/76 OPTIMAL *higher number is systolic, lower is diastolic	94/70



NUFFIELD HEALTH’S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

“We can’t accurately state that the effects of the holiday caused the improvement in his physiological results (eg waist size reduction and lower blood pressure) as it was reported that prior to the follow-up assessment, he had an acute upset stomach. However subjectively he said on the follow-up he felt much less stressed and was told by his staff at work that he looked more relaxed. After the first health assessment he altered his diet eating less saturated fats such as burgers and started including beneficial fats (eg flaxseeds and pumpkin seeds) for his heart health (of which there is a family history). He also started walking briskly for 30 minutes daily so I would expect his physiological results to start mirroring his psychological and HRV stress results over a period of the next three months. We agreed that he would also concentrate on reducing his caffeine intake and start drinking water (1.5 litres daily) to help reduce his uric acid levels which may place him at elevated risk of gout and kidney stones.

“Steve sometimes works nights which might be having an effect on his weight. Often night workers fail to make up for the lost sleep the next day which may reduce satiety hormones which may result in eating bigger portions especially at breakfast.”

Couple 1 results:

Hilary, 47

Her sleep was poor before the holiday and almost at an ideal level later.

This is what Hilary's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days before, during and after her holiday showed:

HEART RATE VARIABILITY			
	BEFORE	DURING	AFTER
STRESS	64%	72%	55%
RECOVERY – ideally above 30%	17%	15%	22%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	+1	-17	+48
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	0	0	67%

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"Hilary went on a holiday with an exciting, but gruelling itinerary. Her stress levels went up slightly during the holiday, probably because of her busy timetable. Also her sleep wasn't very good while away which could have been due to entering a new time zone. However the holiday seems to be showing a very good impact two weeks after she came back. Her stress levels went down almost ten per cent post v pre holiday. Her sleep which was just +1 (on a scale of -100 to +100) before the holiday went to +48 afterwards which is almost at an ideal level. Before the holiday, she wasn't driving the part of her brain that unconsciously drives rest and repair. Her resilience to stress before the holiday was zero which means she was struggling to recover. However this jumped right up to 67 per cent post holiday suggesting her holiday helped her "recharge her batteries". Hilary's holiday was continuing to show positive effects in the weeks after her trip."

And this is what Hilary's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS			
	PRE-HOLIDAY	ON HOLIDAY	POST-HOLIDAY
STRESS	6 = moderately stressed	2.5 = mildly stressed	3.4 = mildly stressed
MOOD	80	83	87
ENERGY	80	84	85

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"On Hilary's second visit to me after the holiday, the closeness between her and Steve was even more evident and warm than it had been on my previous visit. Hilary said in our meeting that she feels a very strong connection to him. She felt that the holiday taught them more about each other and cemented their feelings for each other. She loved the holiday and the variety and stimulus of it and thought the food was terrific. Her stress levels, even some weeks after her holiday, have gone down significantly and her mood and energy levels have gone up which is very good news."

About the participant



NAME: Hilary Durkan

AGE: 47

LIVES IN: Hampshire

JOB: Coastguard

BACKGROUND: Hilary is in a happy relationship with Steve who she works with. They live separately. She has been married previously and has four grown-up children.

WHAT'S HAPPENING TO HILARY: Hilary works long, unsociable hours and her job is demanding and tough. The upside is the variety, which she loves, and a supportive employer. The coastguard service is undergoing restructuring, but she is optimistic about her career. She sometimes worries about the job prospects of one of her children.

FAMILY HISTORY: High blood pressure, stroke and diabetes.

HOLIDAY WE SENT HER ON: Hilary and her partner Steve went on a two-week escorted tour of Thailand.



HOW DOES HILARY FEEL THE TESTS AND HOLIDAY HELPED HER?

I really appreciated the advice on ways to improve my health and proof from the second medical that they were actually working.

I will treasure the new experiences, tastes, sights and sounds of the holiday forever and loved sharing these with my partner. The trip has made Steve more adventurous and he now wants to travel more which is very beneficial to me!



NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"Hilary's waist/hip ratio measurement means that she may have an elevated risk of disease, particularly diabetes. Accumulating fat around the middle (the barrel look) is a classic sign of weight gain from an intake of high-sugar foods, stress and stimulants such as caffeine. Stimulants such as caffeine encourage the release of the stress hormones adrenaline and cortisol, which may promote weight gain. It is common for us to see people who although not eating very much, are still putting on weight around the middle because they are frequently drinking tea and coffee or high sugar drinks all day and are in a stressful job and don't take time to relax. Hilary could lower her waist/hip ratio by taking time to physically and mentally relax (eg taking her annual holiday allowance which she didn't before this study), having a good work life balance, exercising regularly and lowering stimulants such as high sugar foods and caffeine.

"Hilary also has high blood pressure and high cholesterol which can also increase her risk of heart disease. Her blood glucose levels are also high, another risk factor for diabetes (which also runs in her family). Reducing Hilary's stress and lowering her sugar and caffeine intakes is key to reducing blood pressure, cholesterol and blood glucose levels. It is interesting that after the holiday and starting to exercise more as recommended by Nuffield (such as walking to work and doing pilates and zumba) all these results improved as her body is using the blood sugar and cholesterol for energy. We discovered on Hilary's food diary that she was consuming 33.2 per cent of her daily calories through sugar (rather than the daily government recommended guideline level of below ten per cent). This was because Hilary was drinking fresh orange juice throughout the day. Although orange juice has vitamins and antioxidants in it, it is high in natural sugars that can push your blood sugar levels up as much as drinking fizzy soft drinks. Therefore we recommended that she dilute her juice with water, or just drink water (1-1.5 litres per day) to reduce sugar intake. Hilary's blood results also highlighted an elevated result for her uric acid, which may increase her risk of gout and kidney stones long term. Improved hydration will also help avoid Hilary's uric acid crystallising and this risk increasing even more. It's interesting to see that Hilary's body mass index went up slightly after the holiday. However during her repeat health assessment she says she really enjoyed the food on holiday and admitted indulging in larger portion sizes. However, when we weighed her on the second visit she was wearing a heavy uniform which may have skewed results.

"Her blood pressure, cholesterol and blood glucose drops are corresponding with the reductions in stress we saw on her Heart Rate Variability tests which is good for her long-term health."

WHAT ELSE HAS BEEN HAPPENING WITH HILARY?

HILARY			
	REFERENCE RANGES = HEALTHY LEVELS	BEFORE HOLIDAY	AFTER HOLIDAY
BODY MASS INDEX	18.5-25	24.7	25.6
WAIST/HIP RATIO	The lower the difference in number between the waist size and hip size, the higher the risk of diabetes. Barrel shape = diabetes risk.	Very high risk	Very high risk
FASTING BLOOD GLUCOSE	Below 5.8 mmol/L	5.9 mmol/L ELEVATED	4.3 mmol/L IMPROVED
ANY SIGNIFICANT BLOOD RESULTS?	Red and white blood cells are examined for a range of markers.	Uric acid is elevated – could lead to gout or kidney stones	Not retested
CHOLESTEROL	Below 5 mmol/L	5.1 mmol/L ELEVATED	4.7 mmol/L – IMPROVED
BLOOD PRESSURE	*120/80 mmHg or less = optimal	*144/88 mmHg OPTIMAL *higher number is systolic, lower is diastolic	128/86 mmHg IMPROVED

Control group 1:

Mr B, 63

There has been a deep regression in his results and he is in a high state of stress.

This is what Mr B's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days on separate occasions showed:

HEART RATE VARIABILITY			
	FIRST READING	SECOND READING	THIRD READING
STRESS	52%	46%	80%
RECOVERY – ideally above 30%	33%	30%	4%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	18	62	-97
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	67%	100%	0%

About Mr B

ABOUT MR B (AGE 63):

Mr B runs his own business as a property investor. He has a grown-up son. He is in a relationship with Mrs A, but although they spend much time together, they maintain their own separate homes. He finds his job and financial pressures relating to the economy stressful and has concerns about his adult son. He relaxes by playing the piano.



NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY

JAY BREWER SAYS:

"We are not sure what has been happening in Mr B's life between his second and third readings. After the first reading there is an improvement in quality of sleep and resilience to stress. However on his third reading, there has been a deep regression in his results and he is in a high state of stress. It looks like he has had challenging circumstances between readings but we are confident this is an accurate report."

And this is what Mr B's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS		
	FIRST READING	SECOND READING
STRESS	7.1 = highly stressed	7.6 = highly stressed
MOOD	72	72
ENERGY	71	70

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Mr B's stress levels increased somewhat over the late summer and early autumn. They were appreciably higher than Steve's and unlike Steve's they rose over the period in question rather than dipped."

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER ON MR B'S MEDICAL READINGS:

"Mr B's body mass index went up from 27.3 to 28.2 between the first medical and the second which may indicate he has high levels of stress hormones circulating in the body. His other readings stayed pretty static. However, the doctor noticed at the first medical that the blood results showed that he has high levels of gamma GT (liver enzymes) that may be linked to high alcohol intake and may indicate he is at risk of liver disease. Many people use alcohol as a tool to relax, but it does the opposite to the body and is in fact a stimulant."

Control group 1: Mrs A, 54

Her stress levels increased considerably over the summer and early autumn.

This is what Mrs A's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days on separate occasions showed:

HEART RATE VARIABILITY			
	FIRST READING	SECOND READING	THIRD READING
STRESS	45%	44%	58%
RECOVERY – ideally above 30%	35%	15%	18%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	87	17	-28
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	100%	33%	0%

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"We can see that there has been a significant period of stress between the first and second measurements – probably to do with Mrs A starting a new job. Although the amount of time spent being in a stressed state has stayed similar, her time in recovery has reduced. Her sleep quality has dramatically worsened from an excellent score of 87 to just -28, which is well below the optimal range. These readings tell me that Mrs A is not coping or recovering from stress well and this may have an impact on her long-term management of weight and risk of disease."

And this is what Mrs A's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS		
	FIRST READING	SECOND READING
STRESS	5.3 = moderately stressed	7.3 = highly stressed
MOOD	74	73
ENERGY	70	71

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Mrs A's stress levels increased considerably over the summer and early autumn. Her results contrast markedly with those of Hilary, who – with the benefit of a holiday – recorded a drop in stress over the period in question."

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER ON MRS A'S MEDICAL READINGS:

"Mrs A's readings stayed almost identical on the first and second consultations. At the follow up she said she had implemented some dietary recommendations following the first meeting such as quitting alcohol. This was a positive step as 23 per cent of her daily calories had been coming from wine. Although this hasn't had an immediate effect on her results it may improve her health in the long term. We know that toxins in alcohol cause damage to the body and may increase the risk of cancer in women."

About Mrs A

ABOUT MRS A (AGE 54):

Mrs A is a head teacher. She is divorced and has two grown-up children. She is in a relationship with Mr B but they do not live together. She describes herself as "fit as a flea".



Couple 2 results:

Ben, 30

His blood pressure dropped after the holiday indicating lower stress hormones.

This is what Ben's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days before, during and after his holiday showed:

HEART RATE VARIABILITY			
	BEFORE	DURING	AFTER
STRESS	57%	51%	59%
RECOVERY – ideally above 30%	24%	29%	27%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	77	88	87
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	67%	100%	67%

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"Ben made improvements on the holiday in recovery. His sleep quality and resilience all made fantastic improvements. But a couple of weeks after the holiday, only a few minor improvements could be seen and readings returned to pre-holiday readings, except sleep quality which remained ten points above pre-holiday recordings and almost identical to the on-holiday readings which is good news. Post holiday Ben seems to have gone back into the same stressful lifestyle. His stress levels were slightly higher than before. Ben works long hours and may not have been able to implement some recommended lifestyle changes eg more exercise and increasing his intake of fruit and vegetables yet. We have recommended he starts running twice a week instead of once which may help his health longer term. A holiday can help while you are away, but to have the impact over the longer term, you need to implement some of the changes you may have planned in your life when you get back. Some people very quickly move back to their old mindset. Another point is that stress is a very individual thing. It's not about how much stress, but how someone perceives that stress.

"So in the case of Ben and Stacy, we saw that Ben's resilience to stress scores went 67-100-67. However Stacy's resilience scores were lower to start with and then dropping to 0 after the holiday. It may have been that a volunteer holiday was a better option for Ben but for Stacy a different type of holiday may have been needed."

And this is what Ben's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS			
	PRE-HOLIDAY	ON HOLIDAY	POST-HOLIDAY
STRESS	5.4 = moderately stressed	3.6 = mildly stressed	4.6 = moderately stressed
MOOD	53	72	68
ENERGY	55	67	68

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

About the participant

NAME: Ben Clarke

AGE: 30

LIVES IN: Glossop, Derbyshire

JOB: Medical writer



BACKGROUND: He met Stacy when they both worked in Cambridge. She then found a good job up north which is near her family and the couple moved to Derbyshire half way between both of their jobs. They had been married almost a year when they went to Peru.

WHAT'S HAPPENING TO BEN: He runs once a week and sleeps well. He works 10-hour days as standard plus commuting. He described 2012 as "really hard" and his family lives far away in Cornwall. There are big decisions to be made with his new wife Stacy regarding buying a house and whether to start a family.

FAMILY HISTORY: Prostate cancer, thyroid disease and high cholesterol.

HOLIDAY WE SENT HIM ON: Volunteer holiday in Peruvian Amazon rainforest.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Ben's stress levels dropped significantly on holiday – and though they rose again slightly, they did not reach his pre-holiday rating. Ben's mood levels rose slightly on holiday, and remained almost at their new level on his return to the UK. His energy levels rose on holiday and remained at the same level afterwards. Ben has shown resilience in dealing with the considerable changes in his life – and he also responded well to the conditions and challenges he met on the holiday. So I hope that he can work his way through the current uncertainties and find true and enduring happiness."

HOW DOES BEN FEEL THE TESTS AND HOLIDAY HELPED HIM?

The medical tests reassured me that my cholesterol is normal (my family has a history of high levels). It was useful to have my diet reviewed and learn that I may benefit from eating more nuts and seeds for the good oils in them.

The holiday enabled me to spend time with interesting people – volunteers and scientists from Peru. I enjoyed seeing wildlife in such an unspoilt habitat.



WHAT ELSE HAS BEEN HAPPENING WITH BEN?

BEN			
	REFERENCE RANGES = HEALTHY LEVELS	BEFORE HOLIDAY	AFTER HOLIDAY
BODY MASS INDEX	18.5–25	22.6	22.1
WAIST/HIP RATIO	The lower the difference in number between the waist size and hip size, the higher the risk of diabetes. Barrel shape = diabetes risk.	Low risk	Low risk
FASTING BLOOD GLUCOSE	Below 5.8 mmol/L	5 mmol/L	5 mmol/L
ANY SIGNIFICANT BLOOD RESULTS?	Red and white blood cells are examined for a range of markers.	No significant results	No significant results
CHOLESTEROL	Below 5 mmol/L	4.2 mmol/L	4.91 mmol/L
BLOOD PRESSURE	*120/80 mmHg or less = optimal	116/82 *higher number is systolic, lower is diastolic	108/76

NUFFIELD HEALTH’S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

“Ben’s blood pressure started off in the recommended range but this had dropped after the holiday which indicates lower circulating stress hormones. This illustrates you don’t have to do a beach holiday to see benefits to health. For Ben, a volunteer holiday improved his quality of sleep and his stress hormones may have dropped which affected his blood pressure.”

Couple 2 results:

Stacy, 29

A beach holiday may have been a better choice for Stacy.

This is what Stacy's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days before, during and after her holiday showed:

HEART RATE VARIABILITY			
	BEFORE	DURING	AFTER
STRESS	58%	66%	72%
RECOVERY – ideally above 30%	11%	12%	7%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	-40	-23	-54
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	33%	33%	0%

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"It seems that Stacy found her holiday stressful. Her time spent in a stressed state increased on holiday. Returning back from holiday unfortunately she had negative results compared to pre holiday and regressed showing she is more stressed, less relaxed, sleeping poorly and not handling stress well.

"This would make a case for using the Heart Rate Variability (HRV) test to help determine which are the best holidays for a particular person. Stacy's husband Ben seems to have found the volunteer holiday useful but Stacy started off the holiday already not sleeping well and her ability to recover scores were one of the lowest in the whole study. Remember that stress is one's perceptions of an event and that every individual perceives stress differently. In addition, even positive events such as holidays can be stressful and these should be chosen carefully based on your current needs.

"HRV data can be really useful and could determine what form of holiday one chooses. Stacy's husband Ben started the survey one of the healthiest holidaymakers in the survey. Perhaps a combination of a beach holiday (for Stacy) with optional activities for Ben, might be an option in the future."

And this is what Stacy's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS			
	PRE-HOLIDAY	ON HOLIDAY	POST-HOLIDAY
STRESS	6.7 = moderately stressed	3.8 = mildly stressed	4.5 = moderately stressed
MOOD	57	68	61
ENERGY	57	55	52

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

About the participant

NAME: Stacy Young

AGE: 29

LIVES IN: Glossop, Derbyshire

JOB: Medical writer



BACKGROUND: When they went to Peru, Stacy had been married to Ben about a year. They met when both working in Cambridge. She moved to a job up north near her family. The couple moved to Derbyshire half way between their two jobs.

WHAT'S HAPPENING TO STACY: Is vegetarian and has long-running insomnia. Exercises frequently – running, yoga and horse-riding.

FAMILY HISTORY: Cardiomyopathy – Stacy has been tested and has not inherited it.

HOLIDAY WE SENT HER ON: Volunteer holiday living on board a boat on the Amazon with scientists in the Peruvian rainforest.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Stacy reckons that her physical health is good but she sleeps poorly and often wakes early and finds that her mind is whirring with thoughts which prevent her sleeping further. This symptom often indicates that a person has quite 'low mood'. Certainly, at present, Stacy has pressing and potentially life-changing decisions to make – which are undoubtedly weighing her down emotionally. From talking to her and analysing her diaries, I honestly feel that there may be insufficient protein and iron in her diet. For example, I notice that she often lunches on fruit alone (three satsumas might be typical). It is noticeable that her energy levels dip during the second part of most days, and I don't think the link with her diet can be ignored in this respect."



HOW DOES STACY FEEL THE TESTS AND HOLIDAY HELPED HER?

The beneficial effect of the health assessments was having confirmation that we are both in very good health.

The most significant thing I gained from the holiday was that I now realise the importance of being able to have some time each day that is entirely peaceful and quiet. The noise of the generators on the boat was relentless, I found it very difficult to think clearly.



WHAT ELSE HAS BEEN HAPPENING WITH STACY?

STACY			
	REFERENCE RANGES = HEALTHY LEVELS	BEFORE HOLIDAY	AFTER HOLIDAY
BODY MASS INDEX	18.5–25	21.4	21.5
WAIST/HIP RATIO	The lower the difference in number between the waist size and hip size, the higher the risk of diabetes. Barrel shape = diabetes risk.	Moderate	Low risk
FASTING BLOOD GLUCOSE	Below 5.8 mmol/L	5.4 mmol/L	4.4 mmol/L
ANY SIGNIFICANT BLOOD RESULTS?	Red and white blood cells are examined for a range of markers.	No significant results	No significant results
CHOLESTEROL	Below 5 mmol/L	3.6 mmol/L	4.9 mmol/L
BLOOD PRESSURE	*120/80 mmHg or less = optimal	108/88 *higher number is systolic, lower is diastolic	112/80



NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"Stacy has long-standing insomnia and it is very difficult to say what is causing that. Stacy didn't fill in the online food diary so we didn't have the information to analyse it.

"I would probably refer on in a case like this to a Nutritional Therapist to help optimise her vegetarian diet as a link has been identified between reduced levels of particular amino acids and insomnia. I would then couple this referral with a referral to her GP for a sleep clinic."

Control group 2:

Mr N, 27

Mr N is a very rare example and his health assessment should reinforce good behaviour.

This is what Mr N's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days on separate occasions showed:

HEART RATE VARIABILITY			
	FIRST READING	SECOND READING	THIRD READING
STRESS	24%	25%	18%
RECOVERY – ideally above 30%	51%	46%	59%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	63	53	100
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	100%	100%	100%

About Mr N

ABOUT MR N (AGE 27):

Mr N works in the ambulance service and is the partner of Ms M. He has recently had a promotion at work and he works long hours. He finds working night shifts leave him seriously fatigued. He exercises frequently and plays hockey and volleyball and does triathlons. He is very keen to settle down and have a family.



NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"Mr N has by far the best results of anyone in the whole experiment. This guy doesn't feel stress and he's extremely good at recovery. He has fantastic ability to have a deep, long sleep. He is particularly fit and his body is very good at recovery which means the parasympathetic nervous system (the one sometimes known as the 'rest and digest' system) works very well. His results showed improvements in time spent in a physiological stressed state reducing, time spent in a physiological relaxed state increasing and sleep quality improving and his reliance to stress remaining static."

And this is what Mr N's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS		
	FIRST READING	SECOND READING
STRESS	4.7 = moderately stressed	4.2 = moderately stressed
MOOD	76	67
ENERGY	64	58

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Mr N is clearly feeling the pressure of his recent promotion and the long hours – in particular night shifts and he gets fatigued. Mr N and his partner Ms M are both very resilient. They are young and currently bounce back. However, they both told me they are questioning how long they can manage erratic shift work and I think they are right to question this in relation to their health in the long-term."

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER ON MR N'S MEDICAL READINGS:

"Mr N's results are excellent and all in the healthy range. He has a body mass index of 21 and has no area he needs to improve on. Mr N is a very rare example and his health assessment should reinforce good behaviour. He deserves a gold star. His main action points should be to maintain, maintain, maintain."

Control group 2: Ms M, 33

Her results remained steady which you would expect with no change in work pattern.

This is what Ms M's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days on separate occasions showed:

HEART RATE VARIABILITY			
	FIRST READING	SECOND READING	THIRD READING
STRESS	56%	51%	55%
RECOVERY – ideally above 30%	33%	35%	29%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	67	73	67
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	67%	67%	67%

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"Ms M's results remained steady which you would expect in someone with no change in their work or life pattern."

And this is what Ms M's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS		
	FIRST READING	SECOND READING
STRESS	4 = mildly stressed	3.4 = mildly stressed
MOOD	62	70
ENERGY	56	64

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"I feel that Ms M's ratings rose in the main because she is clearly finding her relationship more and more supportive and stable. Her mood also improved considerably because she and her partner booked a holiday to India. They feel that the planning of this holiday has given them a much needed 'lift'."

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER ON MS M'S MEDICAL READINGS:

"Ms M's readings are very static results. She was very healthy in the initial assessment (eg body mass index 21.6 and all readings in the normal range). However, she said she was worried about heart disease in her family and so we recommended she follow the Mediterranean diet (lean meats, fish, pulses, whole grains, nuts, seeds, good fats such as olive oil and a wide range of fruit and vegetables). She said she wanted to have less body fat and get fitter. She agreed to exercise four times a week instead of three, doing swimming and interval training. She followed the advice and in six weeks her body fat fell by two per cent. She lowered her sugar intake by reducing the number of bananas she was eating (they are a high-sugar fruit) and replace them with nuts and other fresh fruits. This is a very good case where a patient has taken on board our comments which have resulted in a very positive impact. It shows that even people who start off in good health can reach an optimal level."

About Ms M

ABOUT MS M (AGE 33):

Ms M and her partner Mr N both work in the ambulance service. She has decisions to make about motherhood and whether to save for a bigger house and about how her career may go in the future. She has travel plans she'd like to fulfil before becoming a mother. She works shifts including many nights which wreak havoc with her sleep and attempts to eat well.



Couple 3 results:

Sarah B, 46

Long-term poor sleep quality may increase risk of heart disease.

This is what Sarah's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days before, during and after her holiday showed:

HEART RATE VARIABILITY			
	BEFORE	DURING	AFTER
STRESS	46%	42%	61%
RECOVERY – ideally above 30%	23%	37%	22%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	29	88	39
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	50%	100%	33%

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"Sarah went on a holiday that was relaxing and easy going. Her sleep quality enormously improved during the holiday to a score of 88, one of the best results from the entire experiment. Sarah's sleep quality also managed to remain higher than pre-holiday values following the post-holiday retest. This highlights the affect that stress has on sleep. When we are stressed or anxious our body keeps its foot on the gas and this ultimately limits our chances of progressing into the deepest stages of sleep, leaving us feeling tired even though we may have slept for a long time. Long-term poor sleep quality may increase risk of heart disease.

"Sarah's ability to cope and recover from stress made a significant improvement during her holiday by improving from a score of 50 to the top score of 100. However, these changes were short lived and after her holiday these dropped to a score of 33. Her stress levels rose after the holiday to above pre-holiday levels. This shows that being on a relaxing holiday results in rapid and dramatic improvements to the way the body physiologically manages stress but if we return back to the same lifestyle as before such as Sarah's 65-hour working week, this won't equate to long-term health."

And this is what Sarah's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS			
	PRE-HOLIDAY	ON HOLIDAY	POST-HOLIDAY
STRESS	3.6 = mildly stressed	1.2 = mildly stressed	4.4 = moderately stressed
MOOD	71	71	75
ENERGY	65	66	70

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

About the participant

NAME: Sarah Bastida

AGE: 46

LIVES IN: Bewdley, Worcestershire

JOB: Global account manager for a facilities management company



BACKGROUND: Sarah is single. She became friends with Sarah Denning when they first met on a previous holiday.

WHAT'S HAPPENING TO SARAH: She works a 65-hour week plus spends two hours commuting each way. She says she's responsible for her punishing working schedule, not the company. She exercises four hours a week and loves rowing. She says being bored makes her stressed.

FAMILY HISTORY: High blood pressure.

HOLIDAY WE SENT HER ON: Sarah travelled with her friend Sarah Denning to an island in the Maldives. This holiday is the longest she's ever had.



CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Sarah told me the holiday made her realise she must make more quality time for herself. She came back with a renewed determination to find a life partner and she says the first step in doing that is to work more realistic hours. Sarah's ratings post holiday were not that different from those before the vacation – except that her evening mood and energy levels were considerably higher.

"Her stress level dropped dramatically on holiday, but has risen again post vacation. I hope that by making various changes – changes which she decided upon in the Maldives – she can emerge a more relaxed and healthy person than she has been for a very long time. She says she has learned a lot of lessons from the Holiday Health Experiment. So I hope that she can now put them into practice."



HOW DOES SARAH FEEL THE TESTS AND HOLIDAY HELPED HER?

The food diary helped me understand my diet, particularly fat and salt. The stress test made me realise I don't take time out to relax on a day-to-day basis.

The holiday helped me bond my friendship with Sarah. I had time away from work to reflect on other areas of my life. And I had an opportunity to sleep! Anything more than six hours a night is rare.



WHAT ELSE HAS BEEN HAPPENING WITH SARAH?

SARAH			
	REFERENCE RANGES = HEALTHY LEVELS	BEFORE HOLIDAY	AFTER HOLIDAY
BODY MASS INDEX	18.5–25	21.59	22.1
WAIST/HIP RATIO	The lower the difference in number between the waist size and hip size, the higher the risk of diabetes. Barrel shape = diabetes risk.	Moderate risk	Moderate risk
FASTING BLOOD GLUCOSE	Below 5.8 mmol/L	4.8 mmol/L	4 mmol/L
ANY SIGNIFICANT BLOOD RESULTS?	Red and white blood cells are examined for a range of markers.	No significant results	No significant results
CHOLESTEROL	Below 5 mmol/L	4.1 mmol/L	4.19 mmol/L
BLOOD PRESSURE	*120/80 mmHg or less = optimal	104/70 mmHg *higher number is systolic, lower is diastolic	110/70 mmHg



NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"Some of Sarah's results increased a very nominal amount after the holiday including her weight, waist size, cholesterol and blood pressure. However, her blood glucose readings did make a small improvement but were in normal ranges to begin with. It is more than likely that these results are showing natural day-to-day variance and are too small to draw conclusions from. However, Sarah did state that during her holiday her exercise had dropped off and for someone so active we would expect a small amount of weight gain as she is being sedentary for a prolonged period. Nevertheless, this may be just what Sarah needed as although exercise is healthy it can become a negative stress if placed onto an already stressed body. With Sarah's working hours it may be wisest to take time to rest and focus on sleep and diet while on holiday.

"Sarah went from working a 65-hour week plus commuting then went on the most relaxed holiday in the experiment. But she then went back to the same routine as before working 65 hours, commuting and rowing. I would focus on her work life balance."

Couple 3 results:

Sarah D, 53

Eating more protein plus resting on holiday helped her sleep quality.

This is what Sarah's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days before, during and after her holiday showed:

HEART RATE VARIABILITY			
	BEFORE	DURING	AFTER
STRESS	70%	47%	57%
RECOVERY – ideally above 30%	14%	28%	29%
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	-26	40	42
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	33%	67%	67%

About the participant



NAME: Sarah Denning

AGE: 53

LIVES IN: Bushey, Herts.

JOB: Private midwife

BACKGROUND: Has three children age 19, 22 and 24.

WHAT'S HAPPENING TO SARAH: Has had high cholesterol since age 43. Has insomnia and worries. Gets exercise walking her dog daily plus twice week gym. Has abdominal bloating. Has caffeinated and sugary drinks throughout the day and sometimes chews nicotine gum though gave up smoking 20 years ago. Recurrent neck and back pain. Works a 55-hour week in shifts. Says she gets mood swings and feels irritable.

FAMILY HISTORY: High cholesterol, heart disease and osteoporosis.

HOLIDAY WE SENT HER ON: Sarah Denning and her friend Sarah Bastida went on a beach holiday to an island in the Maldives.

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"This is a great list of positive results. In particular her sleep has really improved, not only on the holiday but two weeks later she is continuing to do well here. This shows that Sarah used the holiday to rest and recover but she has also been implementing some of our recommendations to manage her sleep. We agreed with her that she would stop chewing nicotine gum and reduce her caffeine and sugar intakes. These are all stimulants which can make us alert and interfere with sleep. We also gave her some wind down techniques to prepare her for sleep and she has been using a meditation app to help. We also recommended that she include protein at her evening meal, in particular proteins such as turkey, chicken and nuts containing the amino acid tryptophan which is needed to make sleep hormone melatonin."

And this is what Sarah's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS			
	PRE-HOLIDAY	ON HOLIDAY	POST-HOLIDAY
STRESS	4.8 = moderately stressed	1.3 = mildly stressed	4.8 = moderately stressed
MOOD	61	76	73
ENERGY	43	50	57

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

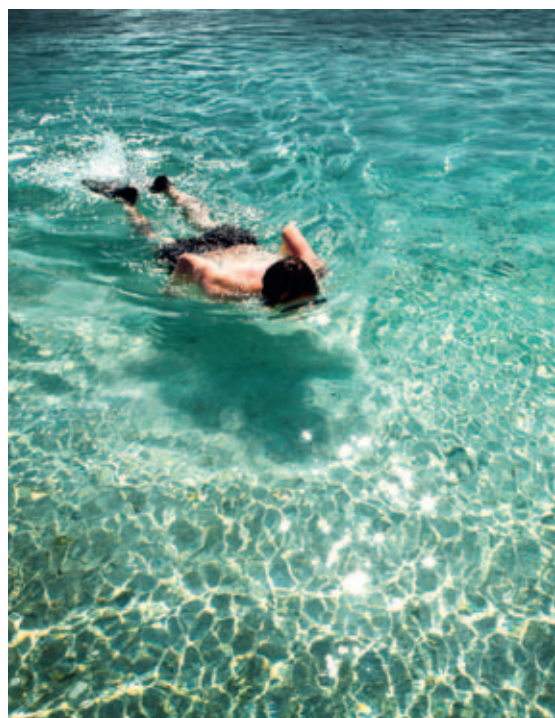
"Sarah clearly had no idea just how exhausted she was until she got away and started to relax. She told me that she was amazed at her capacity to sleep on holiday, once she 'let go'. One thing about having so much sleep was that she realised that she no longer wants to be quite so 'hands-on' in her midwifery business. Currently, she delivers babies during the night several times a week. She is setting up a new web site to give masses of information to pregnant mothers and this may be the way forward for her. The holiday gave Sarah time to reflect and make plans for the future. Her mood and energy ratings are significantly higher in her last lot of diaries – so it appears that her holiday has revitalised her. Her stress rating dropped slightly on holiday but has crept up again since. Clearly, with her new project coming to fruition, she is overwhelmed with work. Once the website is launched she may be able to take a few more deep breaths, and relax."



HOW DOES SARAH FEEL THE TESTS AND HOLIDAY HELPED HER?

The health check led me to change my exercise and learn how to improve the quality of my sleep.

The holiday location was perfect for me. Being in the Maldives made me slow right down. There were few distractions, which made me relax, swim and empty my mind. I also slept a lot! Best ever things? No laptop, no traffic and no noise. It was one of the most therapeutic holidays I have ever had.



WHAT ELSE HAS BEEN HAPPENING WITH SARAH?

SARAH			
	REFERENCE RANGES = HEALTHY LEVELS	BEFORE HOLIDAY	AFTER HOLIDAY
BODY MASS INDEX	18.5–25	21.3	21.3
WAIST/HIP RATIO	The lower the difference in number between the waist size and hip size, the higher the risk of diabetes. Barrel shape = diabetes risk.	Moderate risk	Low risk
FASTING BLOOD GLUCOSE	Below 5.8 mmol/L	5.3 mmol/L	3.8 mmol/L
ANY SIGNIFICANT BLOOD RESULTS?	Red and white blood cells are examined for a range of markers.	No significant results	No significant results
CHOLESTEROL	Below 5 mmol/L	6.4 mmol/L	6.56 mmol/L (only fasted for 4 hours, not preferred 12 like first time)
BLOOD PRESSURE	*120/80 mmHg or less = optimal	110/72 mmHg *higher number is systolic, lower is diastolic	100/70 mmHg



NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"It's interesting that Sarah's body mass index has stayed the same, but her waist size has gone down meaning that her risk of diabetes has reduced from moderate to low. This does not surprise me because we know that Sarah's sleep has improved and she has cut down on nicotine, caffeine and sugar. Lack of sleep plus habitual use of stimulants can lead to increased levels of the stress hormone cortisol in the body. Cortisol is a fat storage hormone that typically adds fat to the middle of the body and face.

"Another area to note is that her blood sugar levels have gone from 5.3 mmol/L pre-holiday on a 12-hour fast to 3.8 mmol/L post-holiday on a four-hour fast. This means her risk of diabetes and heart diseases has gone down. This is a dramatic reduction and would explain her reduced waist size. Reducing her stress levels via a holiday combined with reducing sugar and caffeine and eating a low glycemic index diet with protein at each meal, as we recommended, may have helped. Although the cholesterol reading doesn't look lower, we did check the different types of fats in her blood and noted that her LDL, the bad cholesterol, has actually come down which is good news. This has probably been achieved through her reducing sugar and saturated fat in her diet. Heart disease runs in Sarah's family, so this is particularly pleasing to see."

Control group 3:

Ms Y, 47

Her waist/hip ratio showed a 'very high' risk of diabetes at both assessments.

This is what Ms Y's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days on separate occasions showed:

HEART RATE VARIABILITY			
	FIRST READING	SECOND READING	THIRD READING
STRESS	68%	unavailable	unavailable
RECOVERY – ideally above 30%	12%	unavailable	unavailable
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	-13	unavailable	unavailable
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	33%	unavailable	unavailable

About Ms Y

ABOUT MS Y (AGE 47):

Ms Y is a sales manager and she lives with her partner who works from home and does the cooking. She leaves at 6am daily in her car and goes to the gym for a swim on the way to work. She works long hours and spends much time driving to clients and commuting to work. She is a light sleeper. She has had irritable bowel syndrome for 25 years. She drinks fizzy drinks and ten cups of a tea a day.



NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"We only have one set of readings for this participant. But what we can see is someone who is spending time stressed and not getting much sleep and the sleep she has is not good quality. She isn't getting enough recovery which could all impact her physiology long term."

And this is what Ms Y's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS		
	FIRST READING	SECOND READING
STRESS	3.1 = mildly stressed	3.1 = mildly stressed
MOOD	75	74
ENERGY	66	61

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Her various ratings did not vary much between first and second diaries. However, I did notice her mood and energy levels were lower in the afternoons and the evenings in September than they had been in August, which she describes as 'a quiet month'. My perception of her is that though she is often very busy and is away from home for about 12 hours a day, she actually manages stress very well. She was not pleased with her Nuffield assessment. She insists she is 95/100 healthy, so she was clearly stung by being told at Nuffield that she is 'obese.'"

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER ON MS Y'S MEDICAL READINGS:

"Ms Y's body mass index was 29.4 at the first medical and 29.04 on the second which is high. Her waist/hip ratio showed a 'very high' risk of diabetes at both assessments. After the first assessment we agreed with Ms Y that she would increase the intensity of her exercise, reduce her sugar intake (particularly by cutting down on fizzy drinks) and reduce caffeine (which isn't good for her IBS). At the follow up a month later she said she had been very busy and struggled to implement the action points. She said she didn't want to change her tea intake."

Control group 3: Ms X, 57

Her mood went down and her energy levels dropped.

This is what Ms X's **HEART RATE VARIABILITY** tests wearing a heart monitor for three days on separate occasions showed:

HEART RATE VARIABILITY			
	FIRST READING	SECOND READING	THIRD READING
STRESS	63%	59%	unavailable
RECOVERY – ideally above 30%	16%	20%	unavailable
SLEEP – important to repair body and mind. Ideally above 50 (range goes from -100 to +100)	8	33	unavailable
RESILIENCE TO STRESS – body's ability to manage stress and recover efficiently. Ideally above 30%.	33%	0%	unavailable

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER SAYS:

"The biggest improvement between the first and second reading can be seen in sleep. But her resilience to stress went down from 33 per cent to zero. I would focus on what she is doing to relax to make that more effective."

And this is what Ms X's **PSYCHOTHERAPEUTIC RESULTS** looked like:

PSYCHOTHERAPEUTIC RESULTS		
	FIRST READING	SECOND READING
STRESS	3.1 = mildly stressed	6.4 = moderately stressed
MOOD	72	69
ENERGY	69	61

Stress levels measured on scale 1-10, 10 being the most stressed.
Mood and energy levels measured 0-100 with 100 being the best possible.

CHRISTINE WEBBER, PSYCHOTHERAPIST SAYS:

"Ms X's stress levels increased a great deal between the summer and early autumn. Her mood levels went down and her energy levels dropped. She knows that her current anxiety cannot be good for her own mental health. She said to me: "I need a break. I can hear myself saying all the right things to my clients, but I can't seem to help myself at the moment." She did take a week off within days of our meeting. She said the diaries really got her to face up to her life as it really is."

NUFFIELD HEALTH'S PROFESSIONAL HEAD OF PHYSIOLOGY JAY BREWER ON MS X'S MEDICAL READINGS:

"We have seen a drop in Ms X's body mass index from 23.4 to 22.9 and her waist measurement went down as did her glucose levels (from 5.5 mmol/L to 3.4 mmol/L). It's obvious that she implemented more exercise and focused on reducing her saturated fat and sugar intakes which will have a positive impact on her risk of diseases. Her blood glucose reduction indicates her body is more effectively using energy since increasing exercise (cycling three times a week and exercising on a stepper)."

About Ms X

ABOUT MS X (AGE 57):

Ms X has been married for more than 30 years and has three children in their thirties who she gives a lot of support to. She is an experienced counsellor and works for a charity which is undergoing many changes right now. Her father has terminal cancer and her husband has health issues. She is a light sleeper.





BELLAGIO, LAS VEGAS, USA

TANQUE VERDE RANCH, TUCSON, ARIZONA, USA

SECRETS CAPRI RIVIERA CANCUN, MEXICO

KEYONNA BEACH, ANTIGUA

ST. JAMES'S CLUB MORGAN BAY, ST LUCIA

HILTON PAPAGAYO RESORT, COSTA RICA

EARTHWATCH'S AMAZON RIVERBOAT, IQUITOS

EXPLORA ATACAMA, CHILE

INCA TRAIL EXPERIENCE, PERU

COPACABANA PALACE RIO DE JANEIRO, BRAZIL

Where to wind down in the world



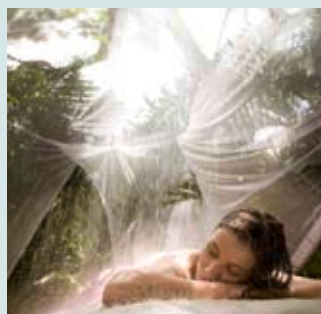
Go Beyond

Your next holiday will be all about discovering the unknown and exploring new worlds. You want real-life face-to-face encounters with foreign cultures - broadening your horizons and bringing home rich experiences.



Explore & Discover

Your next holiday will be dedicated to discovering our world: admiring amazing scenery, visiting famous buildings and going to places that everyone dreams of seeing once in their life.



Mind, Body & Soul

If your next holiday is going to be anything, it's going to be relaxing and restoring your inner balance: letting yourself well and truly go, and pampering your senses in exclusive and stylish surroundings.



Away from it all

The thing that matters most to you on your next holiday is relaxing and taking a break from routine. What's important is being able to switch off completely and recharge the batteries - and the less you have to worry about, the better!



Time together

Your next holiday will be totally devoted to your partner: taking time for each other, enjoying familiar feelings in new surroundings and rediscovering yourselves.



From experienced travellers looking to Go Beyond to wellbeing escapes for those needing to rest Mind, Body and Soul, Kuoni can craft your perfect holiday. On these pages, these icons and flags will help you easily find the hotels and tours that we think are tailored to your personal needs.



For families

Your children will be with you on your next holiday. It's important to you that they can play with new friends and have fun discovering exciting things. After all, only when your children are happy can you truly lie back and relax.



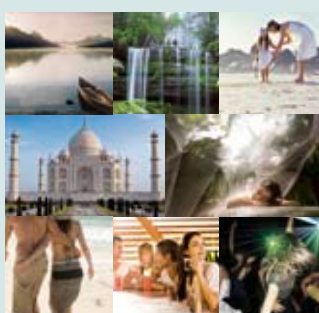
Holidays with friends

You want to spend your next holiday in an informal setting with a group of people who are close to your heart. Relaxing, devoting time to interesting activities, sharing your passions and even a little adventure: they're all on the cards.



Sun & Socialising

You want to live life to the full on your next holiday: sunbathing, relaxing and hitting the nightlife – be it with your partner, friends or new acquaintances. And all that in some cool and happening place.



I want it all

Your next holiday must cater for all tastes: calm and relaxation, entertaining activities, sightseeing, culture and shopping. In other words, you won't be happy unless there's something for everyone to do.

If you can't afford a holiday right now, what could you do to improve your health?

“”

Plan a day doing something as a family that you don't normally do

CHRISTINE WEBBER, PSYCHOTHERAPIST



Here psychotherapist **Christine Webber** offers 6 tips on how to look after your mental health without taking a holiday.

1. Sleep more

Often when people go on holiday, they have no idea how tired they are - till they stop. They usually report having real, deep and nourishing sleep on vacation. This is very energising and invigorating. So, if you want to feel better, work out how you can grab more 'shut-eye' several times a week. It might help too if you make your bedroom a place you really want to be. So, borrow some tips from your favourite holiday hotel and transform your bedroom into a luxury hideaway.

2. Engage in new activities

One of the huge bonuses of a holiday is that you get a greater sense of perspective by seeing how other people live and cope in circumstances very different from your own. Clearly, it's hard to replicate that back in the UK. But if - perhaps at weekends - you can sometimes engage in activities that are very different from your weekday ritual, you will get that sense of tapping into a different world and feeding your soul and lifting yourself out of the humdrum that we value so much while we're on vacation. Good ways to do it are to: walk by the sea; climb a mountain; visit a free museum; enjoy theatre; watch a DVD of David Attenborough or Simon Reeve on their exotic travels.

3. Go on a date

Holidays often bring couples closer together. But with some effort, you can organise more quality time together on a regular basis. Try having a 'date' once a week. If you have children, get a babysitter. If need be, form a babysitter circle so that you and other parents all help each other out, free, on a rota basis. Your date needn't be an expensive one. But it should give you time to re-connect as a couple, and to have some fun and romance.

4. Sit quietly and make a list

We know from past Kuoni research that the majority of people make life-changing decisions on holiday. Something about the unaccustomed time and space enables us to face up to problems and to vow to change them. But if you can't get away, why not sit quietly one day and list those aspects of your life that you'd like to alter. Then pick the one that feels most important, and work out - step by step - how you could gradually effect some changes that would help you to solve this particular difficulty.

5. Have a computer-free day

Most people report that holidays give them a chance to 'switch off' their brains. This is much harder at home than it is when we are away. But why not ban all thoughts of work for at least one whole day per weekend? This means no worrying about the boss, no marking maths homework if you're a teacher, and no work on your laptop connected to your employment. Your weekend will be much more of a rest if you give your mind a complete break from what you do on most other days of the week.

6. Do things together as a family

Holidays often encourage us to try family activities that we don't do at home. Often these pursuits help us to relax and laugh - and bring out a different side to us. So, plan a day doing something as a family that you don't normally do - whether it's beach volleyball, swimming, canoeing, rock climbing or maybe even dancing, or Karaoke.



Nuffield Health suggests a range of free options to keep your health in check...

1. Come to one of our events

Attend one of our 650 Meet Our Experts free events for the general public each year. We advise those who attend on how to boost their wellbeing through areas such as nutrition, fitness and energy. At these there is also free access to physiotherapists and nutritionists. Spinal mouse back scans (a large computer mouse rolled over the back to generate a 3D image to give you specific information about your back, instabilities or curvatures) and peak flow breath tests (to help calculate your lung age) are also on offer for free. For more information:

www.nuffieldhealth.com/fitness-and-wellbeing/meet-our-experts

2. Ask your GP for tests

Some of the tests used in this experiment are available for free through your local NHS GP's surgery - eg blood pressure, blood glucose levels and cholesterol.

3. Work out your bmi & waist/hip ratio online

You can check out your own body mass index and waist/hip ratio through these pages:

<http://www.nuffieldhealth.com/healthmap>

<http://www.nuffieldhealth.com/about-us/waist-size>

4. Eat slower

Several of the participants in this experiment were stressed and often eating on the run. They were advised to switch off phones and computers and sit at a table and chew food properly. This may increase absorption of vitamins and minerals in the body which may help you feel more energised and boost your immune system. It costs nothing - just focus on it!

5. And if planning to fly...

Boost your immune system beforehand. Eat seven to nine portions of fruit and vegetables per day for the two weeks before you travel. When we fly, we are exposed to strangers in a confined space which may lead to coughs and colds. Once in the air, avoid deep vein thrombosis risk by getting up and walking around at least every 1-2 hours. In your seat you can do calf raises, toe taps and knee lifts. Lastly, keep hydrated by drinking water to avoid headaches.

6. And if you do go on holiday...

Enjoy food and booze in moderation. Does every meal have to be overly indulgent? Do you really need to drink alcohol every day to have a good time? Keep active - holidays are a good opportunity to walk, swim and cycle. Enjoy the sun, but remember, lying in the sun for 10 minutes without sun screen is all we need to replenish vitamin D levels. Past this we should always use sunscreen or seek shade. Lastly, reflect. Try to think of one or two changes you would like to make to improve your health when you return home. Once you have your changes decided, list the actions and support you need.



On the brands



Kuoni

We offer bespoke service, expert knowledge and a glass of bubbly while you pick your holiday.

KUONI EST. 1906

Kuoni was established in 1906 in Switzerland by Alfred Kuoni, a visionary adventurer and explorer of his time who opened some of Europe's first travel agencies. Today Kuoni has branch operations in more than 40 countries. For 107 years Kuoni has been creating holidays with a spirit of adventure. Kuoni has come top of a *Which?* Recommended Provider survey, due to the company's reliability and 'excellent customer care'; been voted *World's Leading Tour Operator* for 11 years in a row at the *World Travel Awards*; *Britain's Favourite Tour Operator* as voted by the readers of *Ultra Travel* and the *Daily Mail*; and been voted *Britain's Best Longhaul Tour Operator* by travel agents for the past 29 years. Kuoni recently opened 22 new stylish travel stores across the UK offering a new experience in travel retail with stylish décor, complimentary Champagne, impeccable service and expert knowledge. In 2012 John Lewis and Kuoni announced a new partnership which saw the travel company open exciting new travel concessions in four of the retailer's shops in the Autumn with more to be rolled out from 2013. The Kuoni concessions now open are at John Lewis Southampton, Oxford Street, Reading and Cardiff. They offer the full range of holidays available from Kuoni.



Nuffield Health



Nuffield Health

Nuffield Health provides expert, joined-up healthcare defined by and created for UK health consumers. They are the largest healthcare charity in the UK, providing health services for over 50 years. They are independent of government, have no shareholders and reinvest surplus to improve their facilities or provide public health education. They provide access to 15,000 health experts through their 31 hospitals, 65 fitness & wellbeing centres, 200 corporate facilities and 20 medical clinics to help people get healthy and stay healthy. Nuffield Health is an award-winning not-for-profit body, having won Health Investor Social Enterprise of the Year in 2010 and Private Hospital Group of the Year in 2011. Nuffield Health was recently named Best Workplace Wellbeing Provider at the Health Insurance Awards.

So where do we go from here?

We've learnt that taking the right kind of holiday for you may lower your stress levels, improve your resilience to stress and therefore improve your mental and physical health. These affects may still be showing two weeks after you return, especially if you implement lifestyle changes based on decisions and life reflections made on holiday, when you get back.

Both Kuoni and Nuffield Health were pleased by how accurately the clinical tests mirrored what participants were experiencing in their lives. This has given rise to discussion about how these tests could be used to make our holidays even more bespoke, by tailoring holidays to your exact physiology and emotional needs.

For example, if your results reveal your sleep is poor and your stress levels are high, maybe a holiday with a frantic itinerary or a working holiday isn't for you. This might lead us to help you choose a beach holiday with lots of time to relax in one place. If say, your partner's stress and sleep levels look in better shape, maybe we could choose a resort with excursions and sports for your partner while you relax on the beach.

In the meantime we are concentrating even more on personal service and getting to know our clients really well through contact in our growing retail outlets to prescribe the right holiday.

Derek Jones, managing director at Kuoni, said: *"We have 22 Kuoni stores across the UK and another four inside John Lewis department stores. These are stylish places to come and relax, enjoying a glass of complimentary Champagne and taking the opportunity to get to know our Personal Travel Experts, find out where they have travelled to and what destinations they recommend. Our hope is to build up friendships face-to-face so we can get to know our customers and 'prescribe' a holiday perfect for them at this time in their life."*

The key take-home advice from The Holiday Health Experiment is to combine dietary and lifestyle tips from Nuffield Health and psychotherapist Christine Webber with regular holidays to boost long-term health and recharge your batteries. Going on a holiday and implementing the changes you have taken time to reflect on while away from your normal busy life, could become the 21st century answer to preventive medicine.

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