Supplementary Material

Table S1: Foods consumed in the respective group during the 4-week intervention

|  |  |  |  |
| --- | --- | --- | --- |
|  | **HGI-G** | **LGI-G** | **HFLC-G** |
| General information* Carbohydrates
* Fats1
* Proteins
 | ≥ 65 % (GI > 70)≤ 15 % 15 – 20% | ≥ 65 % (GI < 50)≤ 15 % 15 – 20% | ≤ 50 g per day≥ 65 %15 – 20% |
| Meat, fish, eggs | No limits, but in small amounts, rather low-fat variants (e.g., steak, salmon, chicken breast, cold cuts, eggs) | No limits, but in small amounts, rather low-fat variants (e.g., steak, salmon, chicken breast, cold cuts, eggs) | No limits except for breaded products as fish sticks (e.g., steak, salmon, chicken breast, cold cuts, eggs)  |
| Vegetables | Potato (products) All others only as side dish, but not main carbohydrate serving | No limits except for potatoes  | Low starch vegetables as cabbages, cucumber, salat, tomatoes, peppers; No high-starch vegetables as (sweet) potatoes, legumes or maize  |
| Fruits | Dates (dried), sugared fruitsBananas and grapes allowed  | No limits except for dates, bananas, grapes and sugared fruits | ≤ 200 g, fruits low in sugar as berries, papayas and watermelon  |
| Dairy products | Sugared dairy products as fruit yoghurts, low fat variants should be preferred, mature cheese with a high fat content should be eaten occasionallyRice drink as a high GI alternative for milk  | Low fat products as low-fat curd, low fat yoghurt, cottage cheese, buttermilk; mature cheese in small amounts, no sugared or flavored industrial dairy products | No fresh dairy products (e.g., milk, some low fat and fruit yoghurts) due to the high content of carbohydrates; butter mature cheese, whole yoghurt and cream cheese with a low content of carbohydrates are allowed  |
| Grain products2 | White flour products as white bread, toast but also white rice, millet, couscous, bulgur, pasta, cereals and potatoesNo whole grain (bread, rice, pasta) and pseudocereals  | Whole grain products as whole-grain bread, rice and pastaPseudocereals Oats  | Due to the high content of carbohydrates not allowed; low-carb breads made of nuts and coconut or almond flour can replace conventional bread |

Table S1: Foods consumed in the respective group during the 4-week intervention (continued)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **HGI-G** | **LGI-G** | **HFLC-G** |
| Nuts and seeds | No limits, but in small amounts (source of fat)  | No limits, but in small amounts (source of fat) | No limits except for chestnuts, cashews and pumpkin seeds  |
| Beverages | No limits for non-alcoholic drinks, alcoholic drinks should be limited and strictly avoided before examinations  | Coffee, unsweetened teas, water, sugar-free lemonades and juices on the basis of the allowed fruits; no alcoholic drinks, lemonades and sugared juices  | Coffee, unsweetened teas and water; no alcoholic drinks, lemonades and juices  |
| Sweeteners, sweets and snacks | Low fat snacks as gummi bears, smarties, sorbets, rice cracker, low fat crisps and sports bars, sugar  | Nuts, fruits (except for bananas, grapes and dates), dark chocolate (≥ 70 % cacao), sugar-free marmalade, agave syrup, cinnamon, sugar substitutes as Stevia and Xylitol are allowed  | Nuts, berries, dark chocolate (≥ 70 % cacao), cinnamon, sugar substitutes as Stevia and Xylitol are allowed  |
| 1 Predominantly plant-based (65 %), non-processed fats as oils, fish, nuts and seeds2 cooked *al dente* in the LGI-G to keep the GI as low as possibleThe glycemic index of the foods was based on Foster-Powell et al. (2002) (see Reference 20) |

Table S2: Meal plan examples for a high carbohydrate high glycemic diet (HGI-G)

|  |  |  |
| --- | --- | --- |
| Breakfast  | Smoothie/Muesli based on 300 g:* Sweetened yoghurt (1.5% fat)
* Rice milk

Sweetened with 30g syrup or sugarMixed with* 1 banana, grapes, raisins or dried dates
* 60 g cornflakes, breakfast cereals, instant muesli, puffed rice, puffed amaranth

In addition: coffee with milk and sugar or tea  | Energy: 650 kcalProtein: 21 gCarbohydrates: 124 gFat: 6 g |
| Breakfast | 4 pancakes with the following topping* 30 g maple syrup, sugar
* 30 g jam
* 1 banana or 50 g dried dates, raisins

60 g cottage cheese/cream cheese/curd (low-fat) | Energy: 860 kcalProtein: 28 gCarbohydrates: 156 gFat: 12 g |
| Breakfast or dinner | 1-2 slices of white bread, rice cracker, toast or rusks with* Low-fat turkey or chicken breast
* Low-fat cream cheese, cottage cheese or low-fat curd
* Jam
* Maple or sugar beet syrup

1 banana, grapes, raisins or dried fruitIn addition: coffee sweetened with milk or tea or fruit juice containing sugar | Energy: 600 kcalProtein: 56 gCarbohydrates: 61 gFat: 11 g |
| Lunch or dinner | Chili con carne made from 100 g minced beef, 1/2 onion, 200 g tomato paste, 50 g ketchup, 150 g kidney beans, spices as required70 g baguette or pretzel  | Energy: 760 kcalProtein: 43 gCarbohydrates: 92 gFat: 25 g |
| Lunch or dinner | 80 g white or glutinous rice, 100 g pasta or 350 g potatoes, mashed potatoes or 200 g fries or gnocchi with 100 g fish, meat or seafood low in fat (e.g., chicken breast, beef, trout) and 1 small salat (ca. 40 g) | Energy: 715 kcalProtein: 25 gCarbohydrates: 145 gFat: 3 g |
| Snacks | 100 g dried dates or sugared fruits + 200 g sweetened yoghurt100 g dried dates or sugared fruits + 30 g nuts100 - 150 g jelly beans, toffee | Energy: 400 kcalProtein: 10 gCarbohydrates: 65 gFat: 15 g |

Table S3: Meal plan examples for a high carbohydrate low glycemic diet (LGI-G)

|  |  |  |
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| Breakfast | Smoothie/Muesli based on 300 g:* Sweetened yoghurt (1.5% fat)
* Milk (1.5% fat)
* Soy milk
* Curd (low fat)

Mixed with:* 200 g fruits (e.g., berries, apples, pears)
* 100 g oats
* 30 g agave sirup

In addition: coffee with milk or tea | Energy: 700 kcalProtein: 25 gCarbohydrates: 120 gFat: 11 g |
| Breakfast | Omelet made from 2 eggs, 1 tomato, 150g mushrooms, ½ bell pepper, 5g butter, plus 2 slices of wholegrain bread In addition: 1-2 portions of fruits, coffee with milk or tea  | Energy: 750 kcalProtein: 37 gCarbohydrates: 81 gFat: 27 g |
| Breakfast or dinner | 1-2 slices of wholegrain bread with:* Low-fat turkey or chicken breast
* Low-fat cream cheese, cottage cheese or low-fat curd
* Tomato paste
* Mozzarella (light)
* Egg
* Sugar-free jam
* Agave Syrup
* Hummus

In addition: Vegetables, 1-2 portions of fruit and coffee with milk or tea | Energy: 600 kcalProtein: 50 gCarbohydrates: 70 gFat: 6 g |
| Lunch or dinner | 200 g vegetables cooked or raw (as a salad), 80 g brown rice, buckwheat, quinoa (raw), 100 g legumes with 100 g fish, meat or seafood low in fat (e.g., chicken breast, beef, trout) and tomato sauce, crème fraiche (10% fat) | Energy: 600 kcalProtein: 30 gCarbohydrates: 11 gFat: 17 g |
| Lunch or dinner | Gazpacho made from 170 g strained tomatoes, 170 g cucumber, 170 g belly pepper, 2 tbsp balsamic vinegar, 1 tbsp olive oil, spices as required1 slice whole grain bread | Energy: 320 kcalProtein: 10 gCarbohydrates: 50 gFat: 8 g |
| Snack | 100 g fruits + 200 g unsweetened yoghurt100 g fruits + 30 g nuts | Energy: 400 kcalProtein: 10 gCarbohydrates: 30 gFat: 15 g |

Table S4: Meal plan examples for a high fat low carbohydrate diet (HFLC-G)

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| Breakfast | Muesli based on 300 g:* Greek yoghurt (10% fat)
* Curd (40% fat)
* Coconut milk

Mixed with max. 200g low-sugar fruit (berries, papaya, watermelon) and approx. 50 g nuts or seedsIn addition: coffee with cream or tea | Energy: 670 kcalProtein: 21 gCarbohydrates: 30 gFat: 47 g |
| Breakfast | Omelet made from 3 eggs, 1 tomato, 150g mushrooms, 50g avocado and 30g parmesan, 1 tbsp olive oil | Energy: 700 kcalProtein: 41 gCarbohydrates: 14 gFat: 55 g |
| Breakfast or dinner | 2 slices of low carb bread with:* (Pea)nut butter
* Sausage (salami, liver sausage, mortadella, bacon)
* Cheese 45% (e.g., Emmental, Appenzell, Gouda)
* Double cream cheese
* Butter
* Hummus
* Avocado (also as guacamole)
* Smoked salmon
* Egg

Vegetables as required, 1-2 portions of fruit (max. 200 g) and coffee with cream or tea | Energy: 700 kcalProtein: 32 gCarbohydrates: 20 gFat: 58 g |
| Lunch or dinner | Chili con carne made from 150 g minced beef, 1/2 onion, 250 g tomato paste, 50 g kidney beans, 1 tbsp oil, spices as required | Energy: 570 kcalProtein: 38 gCarbohydrates: 14 gFat: 50 g |
| Lunch or dinner | Coconut soup made from 200 mL coconut milk with 150 g seafood, 100 g zucchini, 100 g belly pepper, curry and other spices as required | Energy: 650 kcalProtein: 32 gCarbohydrates: 10 gFat: 45 g |
| Lunch or dinner | 150 g fish, meat or seafood high in fat (e.g., mackerel, salmon, herring, beef) with 200 g vegetables cooked or raw (as a salad) and low-carb dressing or sauces (e.g., pesto; guacamole; vinaigrette; crème fraiche (at least 30% fat), sour cream sauce, olive oil) | Energy: 800 kcalProtein: 50 gCarbohydrates: 10 gFat: 64 g |
| Snack | 100 g low-sugar fruit (berries, papaya, watermelon) and 100 g nuts or seeds | Energy: 400 kcalProtein: 20 gCarbohydrates: 20 gFat: 50 g |