

**Table S1.** Women's main characteristics and protein intake variables by country.

|                                | Mexico        | U.S.A.       | Germany        | United Kingdom | <i>p</i> -value | Effect size |   |
|--------------------------------|---------------|--------------|----------------|----------------|-----------------|-------------|---|
| <b>n</b>                       | <b>140</b>    | <b>100</b>   | <b>48</b>      | <b>26</b>      |                 |             |   |
| Age (y)                        | 78 ±8 a       | 71 ±7 b      | 78 ±3 a        | 78 ±5 a        | <0.001          | 0.184       | L |
| Body mass (kg)                 | 62.2 ±13.4 a  | 77.6 ±19 b   | 66.0 ±11.1 a   | 65.3 ±11.3 a   | <0.001          | 0.162       | L |
| Height (cm)                    | 150.7 ±7.6 a  | 159.5 ±7.7 b | 158.9 ±5.7 b   | -†             | <0.001          | 0.250       | L |
| BMI (kg/m <sup>2</sup> )       | 27.4 ±6.1 a   | 30.4 ±6.6 b  | 26.2 ±4.3 a    | -†             | <0.001          | 0.062       | M |
| Absolute protein intake (g)    |               |              |                |                |                 |             |   |
| Day                            | 55 ±18 a      | 67 ±24 b,c   | 63 ±14 b       | 73 ±10 c       | <0.001          | 0.089       | M |
| Breakfast                      | 17 ±8 a       | 13 ±8 b      | 15 ±8 a,b      | 13 ±5 a,b      | 0.001           | 0.040       | S |
| Lunch                          | 24 ±12        | 21 ±14       | 22 ±9          | 27 ±14         | 0.153           | 0.011       | S |
| Dinner                         | 12 ±8 a       | 28 ±15 b     | 18 ±8 c        | 33 ±11 b       | <0.001          | 0.333       | L |
| Relative protein intake (g/kg) |               |              |                |                |                 |             |   |
| Day                            | 0.93 ±0.37 a  | 0.91 ±0.41 a | 0.97 ±0.25 a   | 1.14 ±0.22 b   | 0.001           | 0.019       | S |
| Breakfast                      | 0.29 ±0.15 a  | 0.19 ±0.13 b | 0.23 ±0.13 a,b | 0.20 ±0.08 b   | <0.001          | 0.096       | M |
| Lunch                          | 0.40 ±0.22 a  | 0.28 ±0.19 b | 0.34 ±0.15 a,b | 0.42 ±0.22 a   | <0.001          | 0.062       | M |
| Dinner                         | 0.21 ±0.14 a  | 0.38 ±0.23 b | 0.28 ±0.13 c   | 0.52 ±0.19 d   | <0.001          | 0.236       | L |
| Daily contribution (%)         |               |              |                |                |                 |             |   |
| Breakfast                      | 32 ±14 a      | 21 ±12 b,c   | 24 ±12 b       | 18 ±7 c        | <0.001          | 0.158       | L |
| Lunch                          | 43 ±15 a      | 31 ±16 b     | 35 ±13 b       | 36 ±15 a,b     | <0.001          | 0.099       | M |
| Dinner                         | 22 ±12 a      | 41 ±16 b     | 28 ±10 c       | 46 ±14 b       | <0.001          | 0.323       | L |
| PDCV                           | 0.55 ±0.26 ab | 0.62 ±0.27 a | 0.44 ±0.22 b   | 0.60 ±0.19 a,b | 0.002           | 0.038       | S |

† Data not obtained.

B.M.I.: Body mass index; g/kg: grams of protein per kilogram of body mass; L: Large effect size; M: Medium effect size; S: Small effect size; PDCV: Protein distribution coefficient of variation (dimensionless); U.S.A.: United States of America..

Countries not sharing a similar letter denote significant differences between them ( $p \leq 0.05$ ) within each variable.

**Table S2.** Men's main characteristics and protein intake variables by country.

|                                | Mexico         | U.S.A.       | Germany      | United Kingdom | <i>p</i> -value | Effect size |   |
|--------------------------------|----------------|--------------|--------------|----------------|-----------------|-------------|---|
| <b>n</b>                       | <b>47</b>      | <b>100</b>   | <b>49</b>    | <b>12</b>      |                 |             |   |
| Age (y)                        | 80 ±7 a        | 71 ±7 b      | 78 ±3 a      | 76 ±5 a        | <0.001          | 0.294       | L |
| Body mass (kg)                 | 66.1 ±12.1 a   | 90.0 ±18.2 b | 81.9 ±11.9 c | 73.9 ±11.8 a,c | <0.001          | 0.275       | L |
| Height (cm)                    | 161.9 ±7.9 a   | 173.7 ±7.1 b | 173.1 ±5.9 b | -†             | <0.001          | 0.326       | L |
| BMI (kg/m <sup>2</sup> )       | 25.1 ±3.9 a    | 29.7 ±5.2 b  | 27.3 ±3.7 c  | -†             | <0.001          | 0.139       | M |
| Absolute protein intake (g)    |                |              |              |                |                 |             |   |
| Day                            | 61 ±24 a       | 82 ±29 b     | 77 ±21 b     | 81 ±15 a,b     | <0.001          | 0.082       | M |
| Breakfast                      | 18 ±10         | 18 ±10       | 18 ±9        | 16 ±7          | 0.910           | 0.000       | T |
| Lunch                          | 28 ±14         | 24 ±15       | 26 ±10       | 32 ±16         | 0.322           | 0.010       | S |
| Dinner                         | 14 ±10 a       | 33 ±19 b     | 25 ±11 c     | 33 ±15 b,c     | <0.001          | 0.184       | L |
| Relative protein intake (g/kg) |                |              |              |                |                 |             |   |
| Day                            | 0.95 ±0.39     | 0.93 ±0.34   | 0.96 ±0.30   | 1.14 ±0.30     | 0.244           | 0.005       | T |
| Breakfast                      | 0.28 ±0.16     | 0.21 ±0.13   | 0.22 ±0.11   | 0.23 ±0.12     | 0.063           | 0.035       | S |
| Lunch                          | 0.43 ±0.21 a   | 0.28 ±0.19 b | 0.33 ±0.13 b | 0.45 ±0.26 a,b | 0.001           | 0.099       | M |
| Dinner                         | 0.21 ±0.15 a   | 0.37 ±0.20 b | 0.32 ±0.15 b | 0.45 ±0.21 b   | <0.001          | 0.113       | M |
| Daily contribution (%)         |                |              |              |                |                 |             |   |
| Breakfast                      | 30 ±11 a       | 23 ±13 b     | 23 ±9 b      | 21 ±10 a,b     | 0.003           | 0.053       | S |
| Lunch                          | 45 ±15 a       | 31 ±16 b     | 34 ±11 b     | 40 ±17 a,b     | <0.001          | 0.120       | M |
| Dinner                         | 23 ±12 a       | 39 ±15 b     | 33 ±12 b     | 39 ±17 b       | <0.001          | 0.165       | L |
| PDCV                           | 0.52 ±0.26 a,b | 0.56 ±0.29 a | 0.41 ±0.26 b | 0.59 ±0.17 a,b | 0.013           | 0.038       | S |

† Data not obtained.

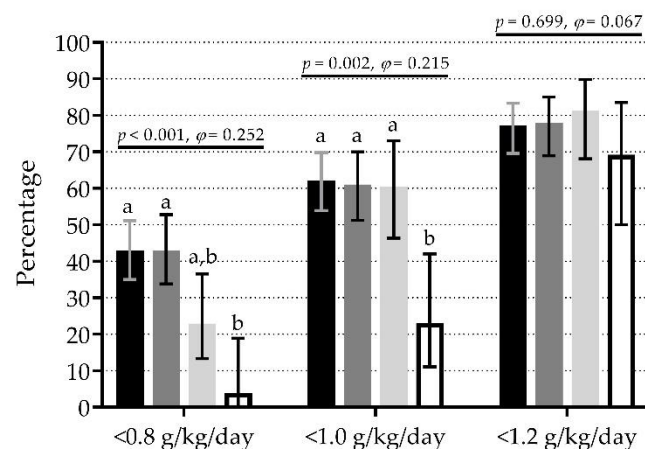
B.M.I.: Body mass index; g/kg: grams of protein per kilogram of body mass; L: Large effect size; M: Medium effect size; PDCV: Protein distribution coefficient of variation (dimensionless); S: Small effect size; T: Trivial effect size; U.S.A.: United States of America.

Countries not sharing a similar letter denote significant differences between them ( $p \leq 0.05$ ) within each variable.

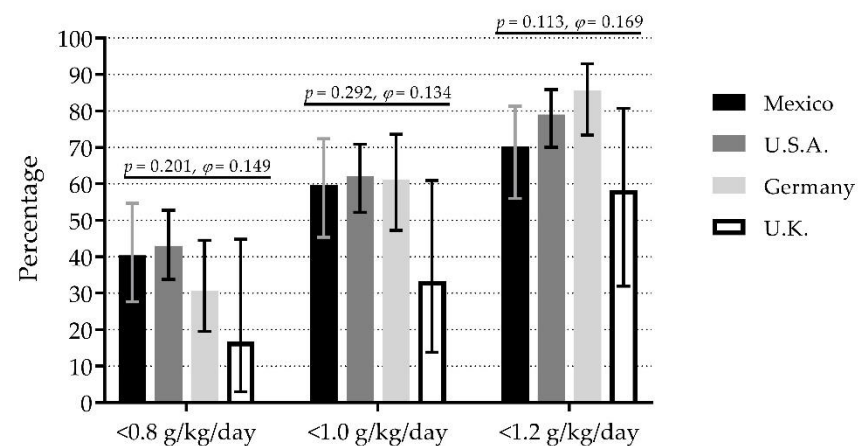
**Table S3.** Detailed inadequate protein intake per day and meal in older adults from four countries.

|  | <b>Mexico<br/>(n=187)</b> |        |             | <b>U.S.A.<br/>(n=200)</b> |        |             | <b>Germany<br/>(n=97)</b> |        |             | <b>United Kingdom<br/>(n=38)</b> |        |             |
|--|---------------------------|--------|-------------|---------------------------|--------|-------------|---------------------------|--------|-------------|----------------------------------|--------|-------------|
|  | n                         | %      | 95%CI       | n                         | %      | 95%CI       | n                         | %      | 95%CI       | n                                | %      | 95%CI       |
| <b>Inadequate protein intake per day</b>                               |                           |        |             |                           |        |             |                           |        |             |                                  |        |             |
| <0.8 g/kg/d  | 79                        | (42.2) | 35.4 – 49.4 | 86                        | (43.0) | 36.3 – 49.9 | 26                        | (26.8) | 19.0 – 36.4 | 3                                | (7.9)  | 2.7 – 20.8  |
| <1.0 g/kg/d  | 115                       | (61.5) | 54.4 – 68.2 | 123                       | (61.5) | 54.6 – 68.0 | 59                        | (60.8) | 50.9 – 69.9 | 10                               | (26.3) | 15.0 – 42.0 |
| <1.2 g/kg/d  | 141                       | (75.4) | 68.8 – 81.0 | 157                       | (78.5) | 72.3 – 83.6 | 81                        | (83.5) | 74.9 – 89.6 | 25                               | (65.8) | 49.9 – 78.8 |
| <b>Inadequate protein intake per meal (&lt;30 g/meal)</b>              |                           |        |             |                           |        |             |                           |        |             |                                  |        |             |
| Breakfast  | 173                       | (92.5) | 87.8 – 95.5 | 183                       | (91.5) | 86.8 – 94.6 | 90                        | (92.8) | 85.8 – 96.5 | 37                               | (97.4) | 86.5 – 99.9 |
| Lunch  | 124                       | (66.3) | 59.3 – 72.7 | 154                       | (77.0) | 70.7 – 82.3 | 71                        | (73.2) | 63.6 – 81.0 | 24                               | (63.2) | 47.3 – 76.6 |
| Dinner   | 181                       | (96.8) | 93.2 – 98.5 | 114                       | (57.0) | 50.1 – 63.7 | 79                        | (81.4) | 72.6 – 87.9 | 14                               | (36.8) | 23.4 – 52.7 |
| <b>Inadequate protein intake per meal (&lt;0.4 g/kg/meal)</b>          |                           |        |             |                           |        |             |                           |        |             |                                  |        |             |
| Breakfast  | 144                       | (77.0) | 70.5 – 82.5 | 188                       | (94.0) | 89.8 – 96.5 | 88                        | (90.7) | 83.3 – 95.0 | 37                               | (97.4) | 86.5 – 99.9 |
| Lunch  | 93                        | (49.7) | 42.6 – 56.8 | 161                       | (80.5) | 74.5 – 85.4 | 70                        | (72.2) | 62.5 – 80.1 | 23                               | (60.5) | 44.7 – 74.4 |
| Dinner   | 172                       | (92.0) | 87.2 – 95.1 | 128                       | (64.0) | 57.1 – 70.3 | 78                        | (80.4) | 71.4 – 87.1 | 12                               | (31.6) | 19.1 – 47.5 |
| <b>Number of meals per day with <math>\geq 30</math> g protein</b>     |                           |        |             |                           |        |             |                           |        |             |                                  |        |             |
| Zero   | 114                       | (61.0) | 53.8 – 67.7 | 84                        | (42.0) | 35.4 – 48.9 | 59                        | (60.8) | 50.9 – 69.9 | 4                                | (10.5) | 4.2 – 24.1  |
| One  | 64                        | (34.2) | 27.8 – 41.3 | 87                        | (43.5) | 36.8 – 50.4 | 28                        | (28.9) | 20.8 – 38.6 | 29                               | (76.3) | 60.8 – 87.0 |
| Two or three   | 9                         | (4.8)  | 2.6 – 8.9   | 29                        | (14.5) | 10.3 – 20.1 | 10                        | (10.3) | 5.7 – 17.9  | 5                                | (13.2) | 5.8 – 27.3  |
| <b>Number of meals per day with <math>\geq 0.4</math> g protein/kg</b> |                           |        |             |                           |        |             |                           |        |             |                                  |        |             |
| Zero   | 77                        | (41.2) | 34.4 – 48.3 | 97                        | (48.5) | 41.7 – 55.4 | 56                        | (57.7) | 47.8 – 67.1 | 3                                | (7.9)  | 2.7 – 20.8  |
| One  | 73                        | (39.0) | 32.3 – 46.2 | 84                        | (42.0) | 35.4 – 48.9 | 30                        | (30.9) | 22.6 – 40.7 | 28                               | (73.7) | 58.0 – 85.0 |
| Two or three   | 37                        | (19.8) | 14.7 – 26.1 | 19                        | (9.5)  | 6.2 – 14.4  | 11                        | (11.3) | 6.5 – 19.2  | 7                                | (18.4) | 9.2 – 33.4  |

95%CI: 95% confidence intervals; g/kg/d: grams of protein per kilogram of body mass per day; U.S.A.: United States of America.

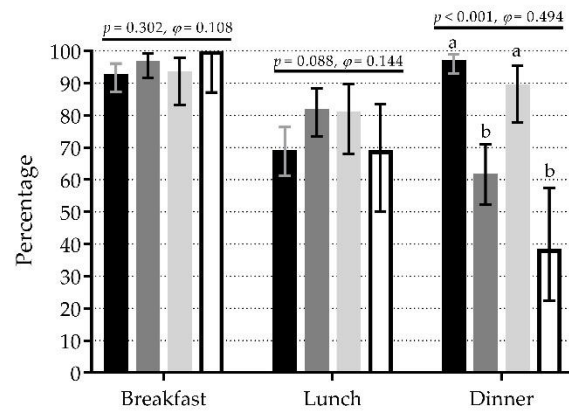


(a)

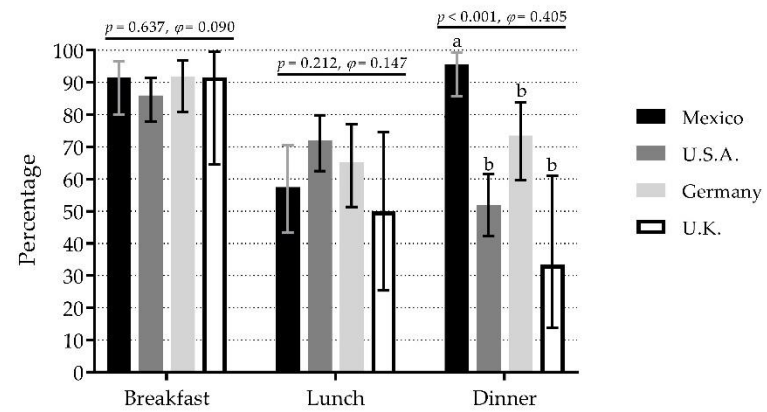


(b)

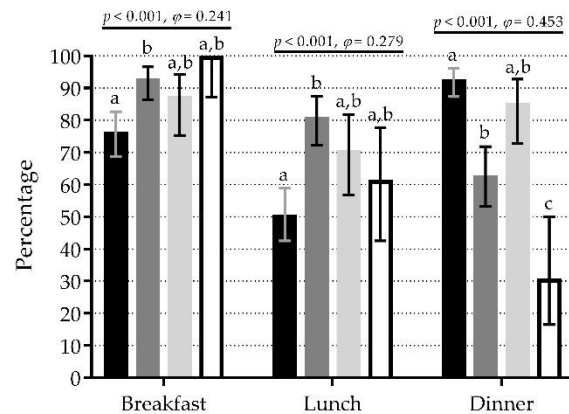
**Figure S1.** Comparison of inadequate protein intake per day with different cut-points among older adults from four countries in women (a) and men (b). Bars represent the percentage of inadequate protein intake per day; whiskers represent 95% confidence intervals.  $p$ -values and  $\phi$  statistic for comparisons among countries within cut-points ( $\chi^2$  test of independence). Bars not sharing a similar letter denote significant differences ( $p \leq 0.05$ ) among countries within cut-points ( $t$ -test for proportions with Bonferroni correction). g/kg/day: grams of protein per kilogram of body mass per day; U.K.: United Kingdom; U.S.A.: United States of America.



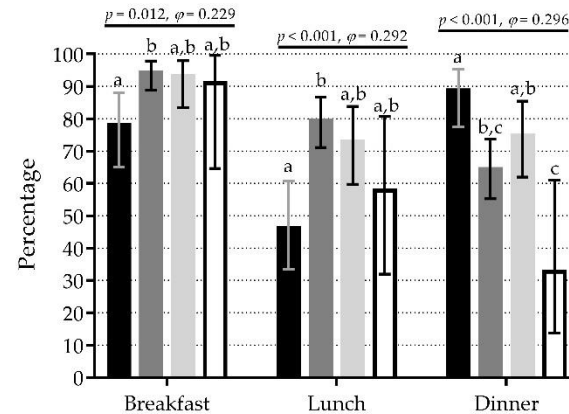
(a)



(b)

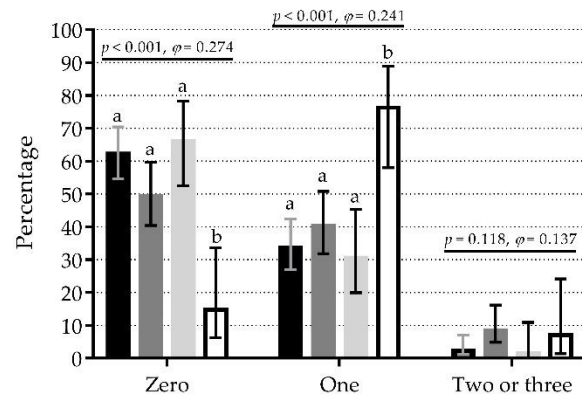


(c)

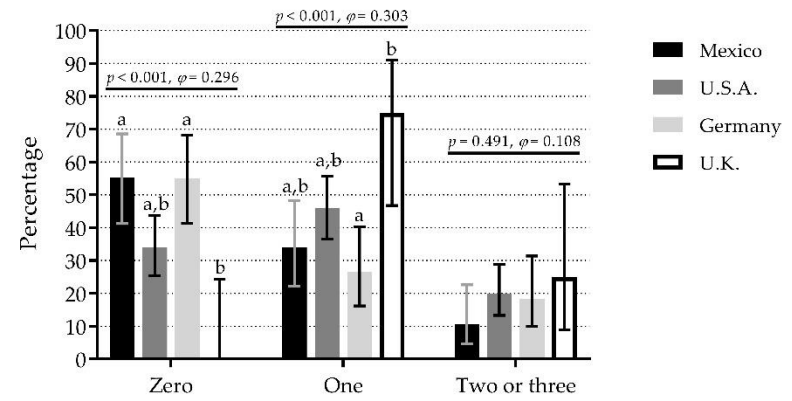


(d)

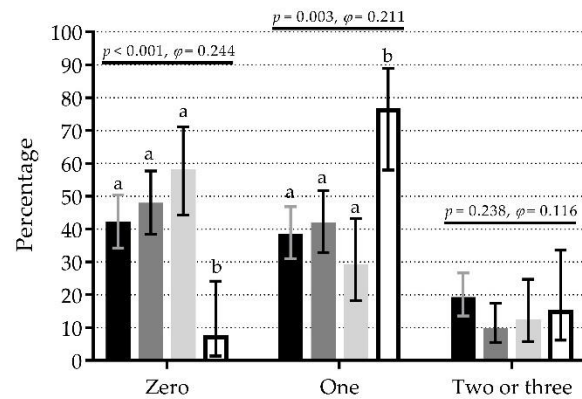
**Figure S2.** Comparison of inadequate protein intake per meal (breakfast, lunch, dinner) among four countries depending on the protein content for each meal as  $<30$  g/meal (**a, b**) or  $<0.4$  g/kg body mass/meal (**c, d**) in women (**a, c**) and men (**b, d**). Bars represent the percentage of inadequate protein intake per meal; whiskers represent 95% confidence intervals.  $p$ -values and  $\phi$  statistic for comparisons among countries within meals ( $\chi^2$  test of independence). Bars not sharing a similar letter denote significant differences ( $p \leq 0.05$ ) among countries within meals ( $t$ -test for proportions with Bonferroni correction). U.K.: United Kingdom; U.S.A.: United States of America.



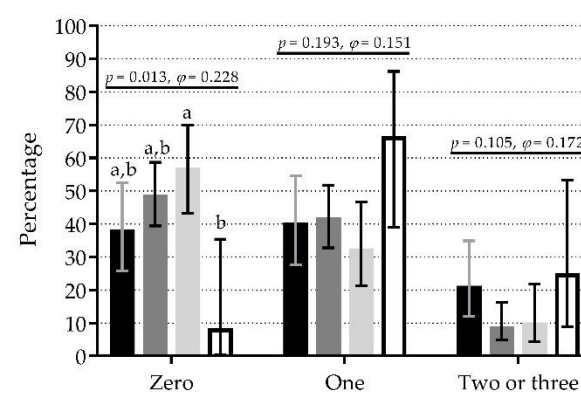
(a)



(b)



(c)



(d)

**Figure S3.** The number of meals per day containing  $\geq 30$  g protein (**a, b**) or  $\geq 0.4$  g protein/kg body mass (**c, d**), in women (**a, c**) and men (**b, d**) and compared among countries. Bars represent the percentage of participants that reported the number of meals per day (zero, one, two or three) with the mentioned protein content; whiskers represent 95% confidence intervals.  $p$ -values and  $\phi$  statistic for comparisons among countries within the number of meals ( $\chi^2$  test of independence). Bars not sharing a similar letter denote significant differences ( $p \leq 0.05$ ) among countries within the number of meals ( $t$ -test for proportions with Bonferroni correction). U.K.: United Kingdom; U.S.A.: United States of America.