GLOBAL WELLNESS
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OCTOBER 6-8 | TECHNOGYM | CESENA, ITALY

Blue Zones:
The Full and Fascinating Story Begins

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GLOBAL WELLNESS SUMMIT 2018

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The discovery of Exceptional Longevity in Sardinia

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Cesena

October 6th , 2018

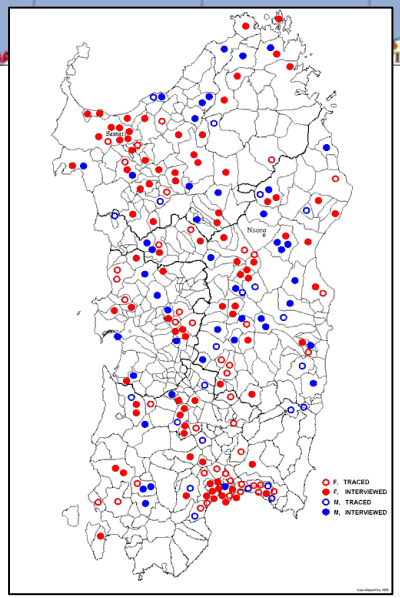
Why did I get involved in longevity research?

Several cases of exceptional longevity occurred in my family. My great-grand-Uncle lived to 110

Pasquale Frasconi (1893-2004)

Why did I get involved in longevity research?

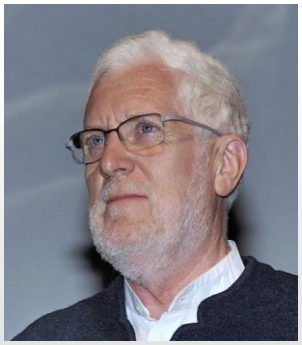
In 1996 I started collecting data on centenarians all over Sardinia. My database includes more than 3500 individuals who reached 100 years of age and is constantly updated.



Collaborators

Michel Poulain

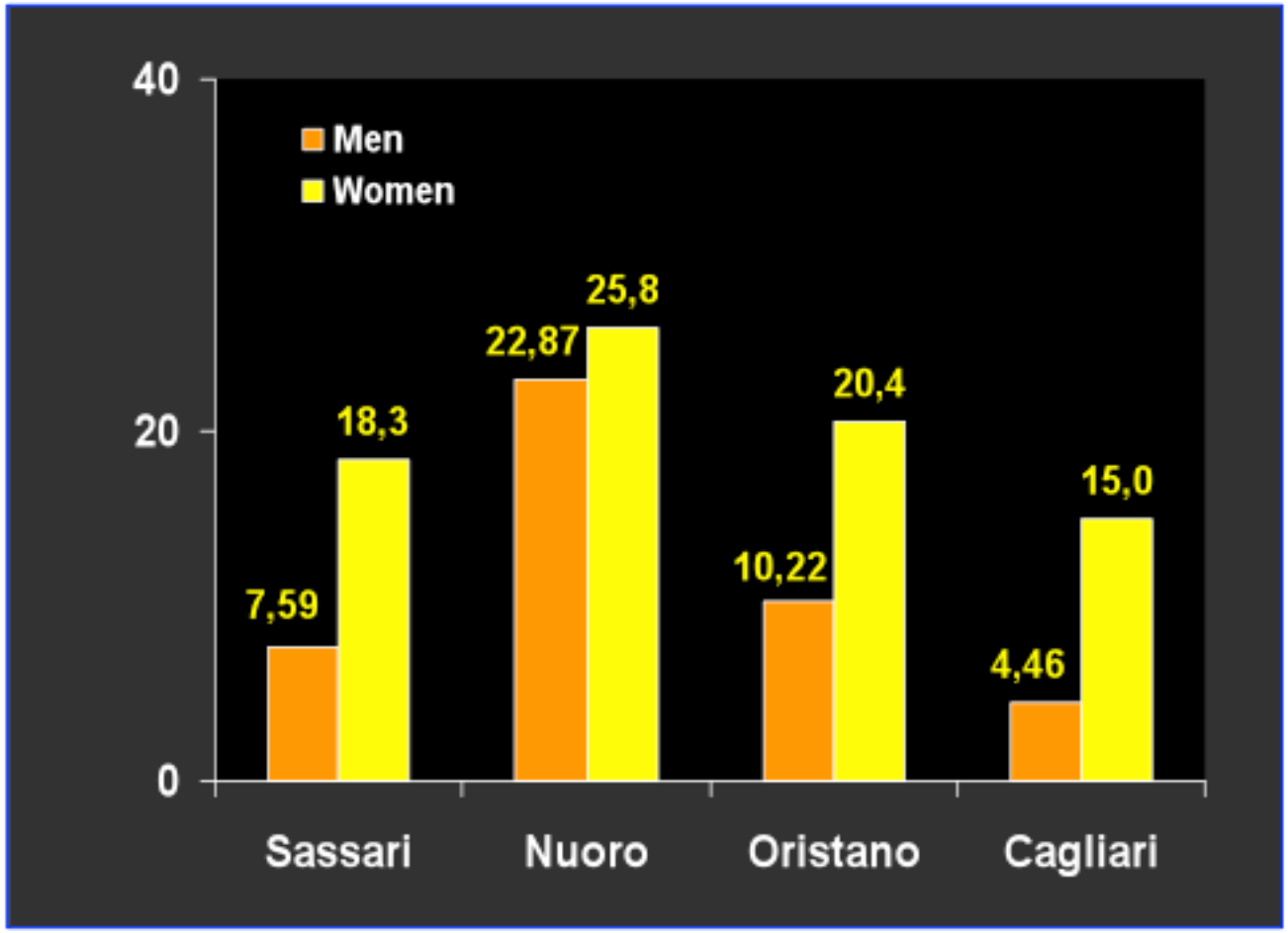
Senior Researcher at Estonian Institute for Population Studies at Tallinn University, Estonia



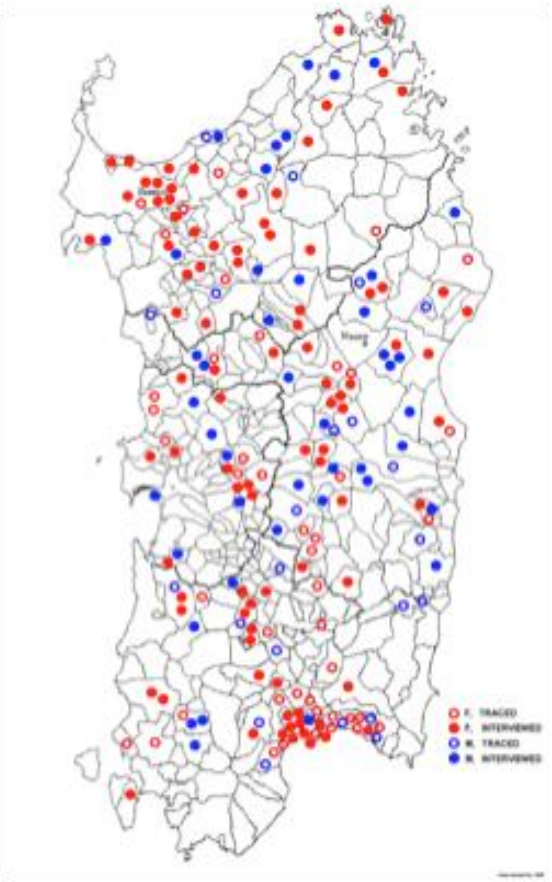
Dan Buettner

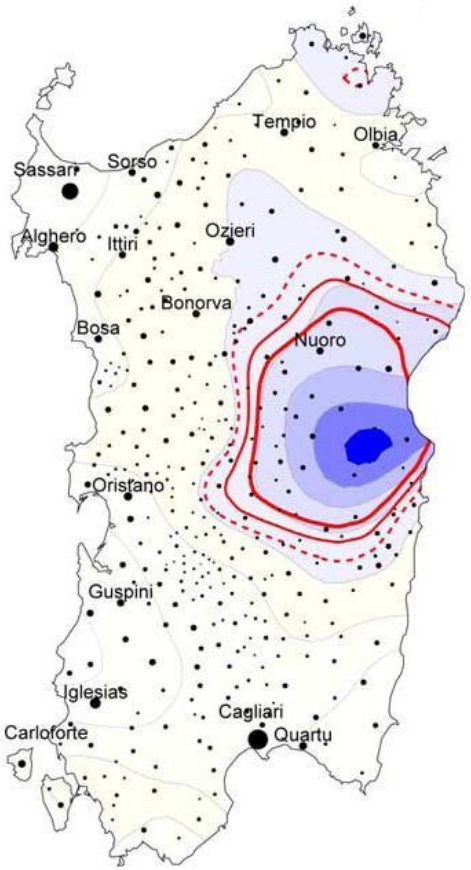
National Geographic Fellow and New York Times Bestselling author of ***The Blue Zones***

Centenarian prevalence in Sardinia as presented in a Montpellier meeting (1999)



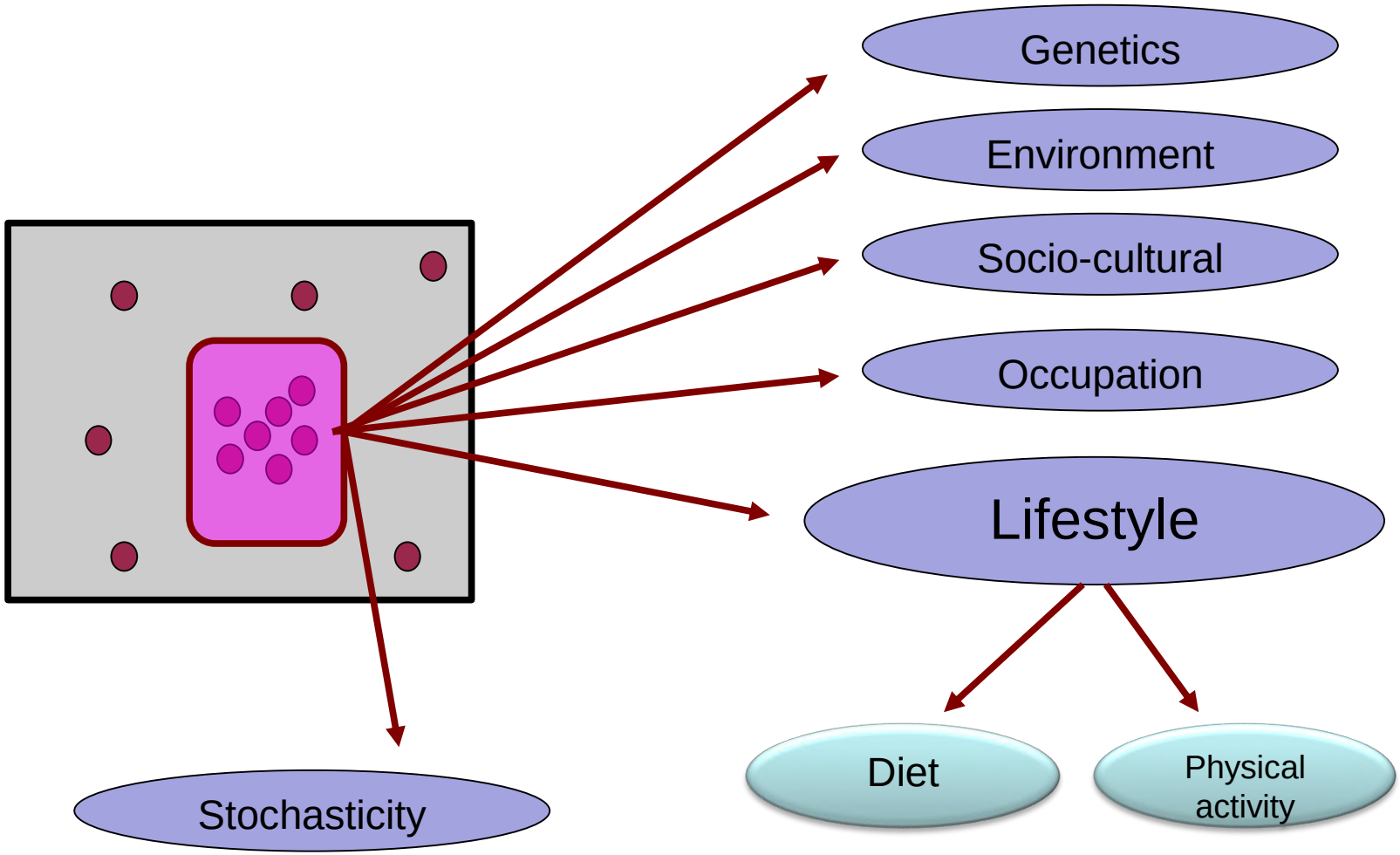
Shaping the Sardinian Blue Zone





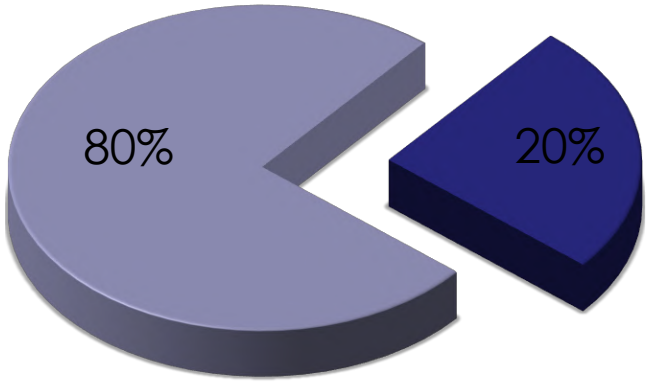
Poulain & Pes, march 2000

Is the longevity clustering due to chance or to some causal factors?



Genetic factors

Genetic Heritability of Human Lifespan



Twin studies:	McGue et al., 1993	0.22
	Herskind AM et al., 1996	0.25
	Ljungquist et al., 1998	<0.33

Traditional family studies:	Mayer et al., 1990	0.10-0.33
	Gavrilova et al.,	0.18-0.58
	Cournil et al., 2000	0.27

ANTONIO TODDE
The oldest man in the world in 2001

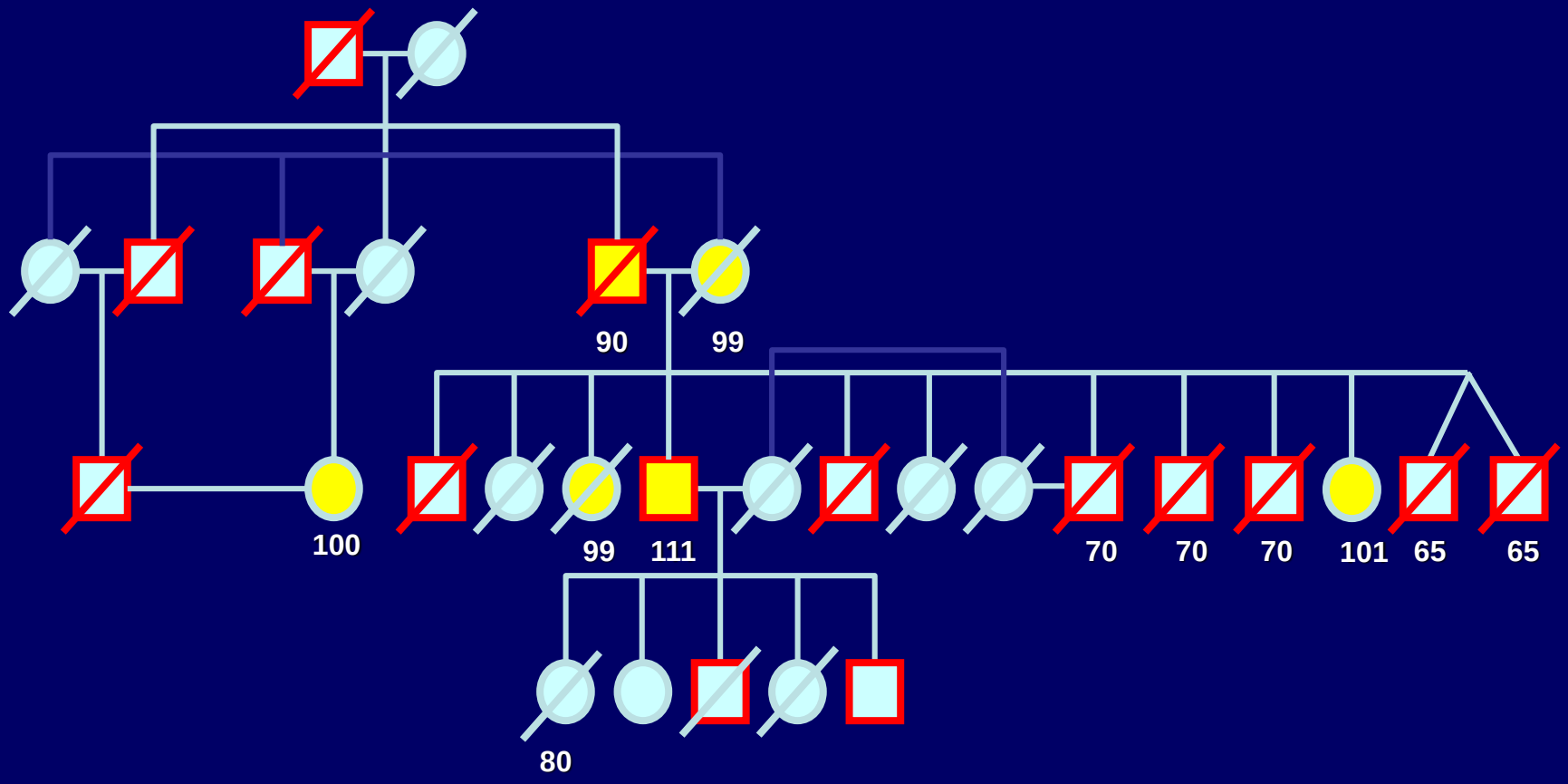

GUINNESS
WORLD RECORDS

CERTIFICATE

Antonio Todde
who was born on
22 January 1889,
in Tiana, Sardinia, Italy
is the world's oldest living man

Keeper of the Records
GUINNESS WORLD RECORDS LTD

Family of Antonio Todde



Lifestyle factors

Sardinian Blue Zone

Ecological study

Lifestyle and nutrition related to male longevity in Sardinia: An ecological study

G.M. Pes [a,*], F. Tolu [b], M. Poulain [c,g], A. Errigo [d], S. Masala [d], A. Pietrobelli [e,h], N.C. Battistini [f], M. Maioli [d]

Table 2 Differences between the high male longevity area ("BZ") and the rest of Sardinia for nutrition/lifestyle variables.

Covariates	BZ (mean ± SD)	Rest of Sardinia (mean ± SD)	OR (95% CI)	*P* value
Occupation/lifestyle				
Pastoralism score	2.8 ± 1.4	1.6 ± 1.0	1.69 (1.30–2.20)	0.0001
Average terrain's slope (%)	15.2 ± 6.6	11.5 ± 6.2	1.17 (1.10–1.26)	0.0001
Daily distance to workplace (km)	12.4 ± 7.8	8.2 ± 6.0	1.14 (1.07–1.19)	0.0001
Robustness score (0–3)	1.9 ± 0.8	1.4 ± 0.9	1.53 (1.15–2.04)	0.004
Body height score (1–3)	2.0 ± 0.5	1.7 ± 0.6	1.36 (0.77–2.40)	0.289

Cox and Snell "pseudo" R-squared = 0.307.

Pes et al., 2013

Occupation / physical activity

Occupation/lifestyle				
Pastoralism score	2.8 ± 1.4	1.6 ± 1.0	1.69 (1.30–2.20)	0.0001
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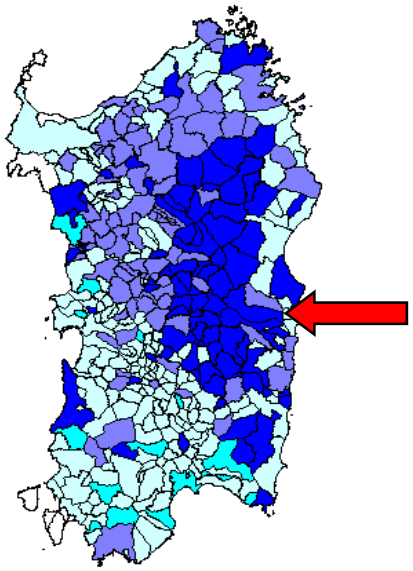
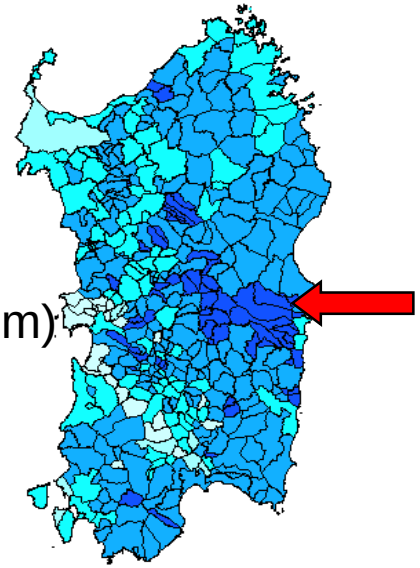


4 (maximum)



21.8%

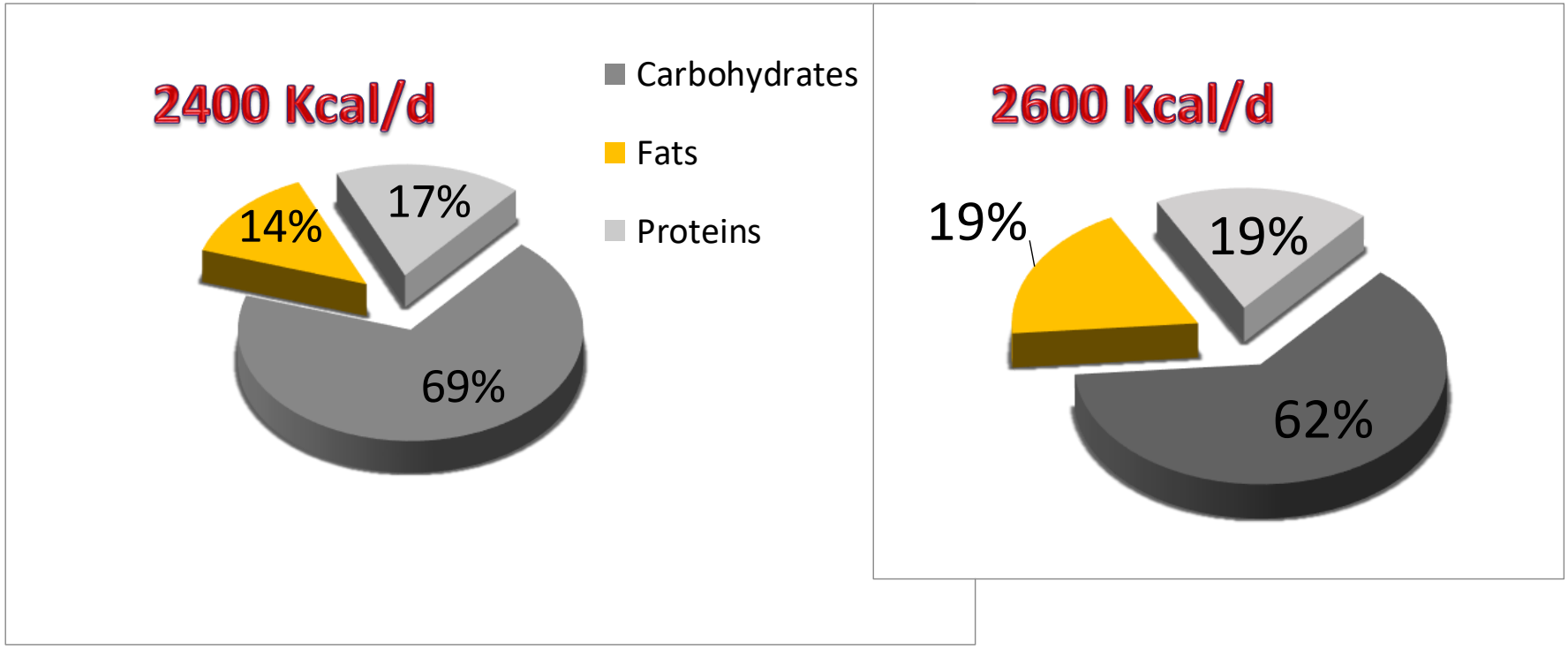
Animal husbandry

Terrain steepness

Pes et al., 2013

Nutrition

Calorie intake



Non-Blue Zone

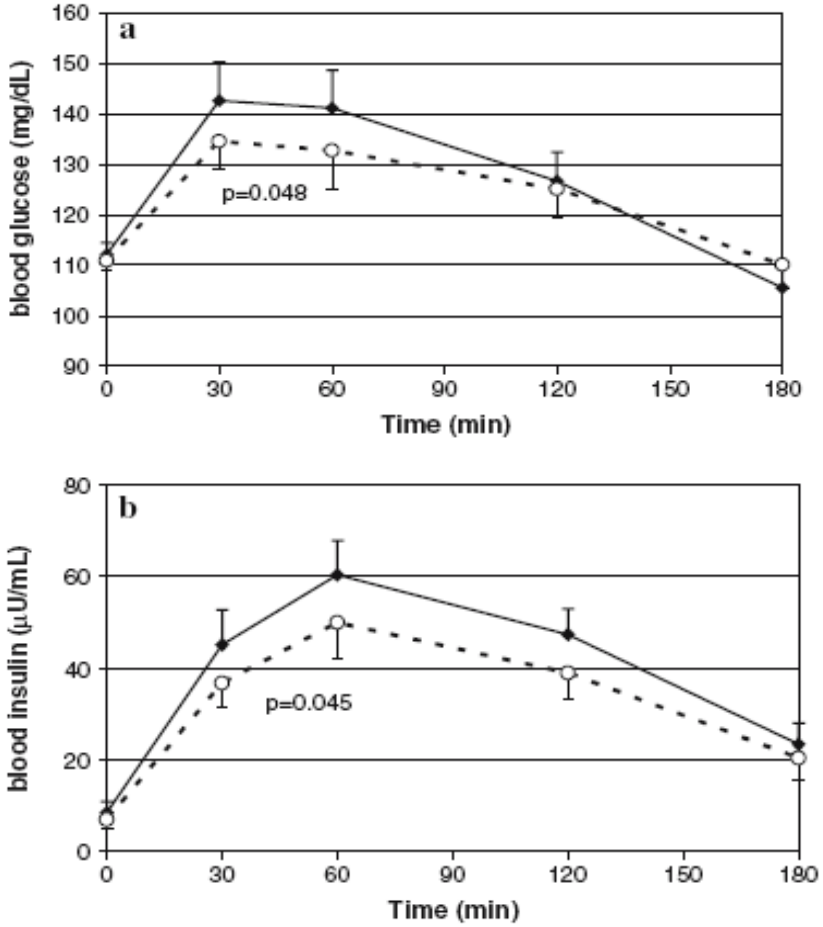
Blue Zone

Carbohydrates
Main energy source in Sardinia

Traditional bread of the Blue Zone

Sourdough bread

Highly consumed in Sardinia before transition



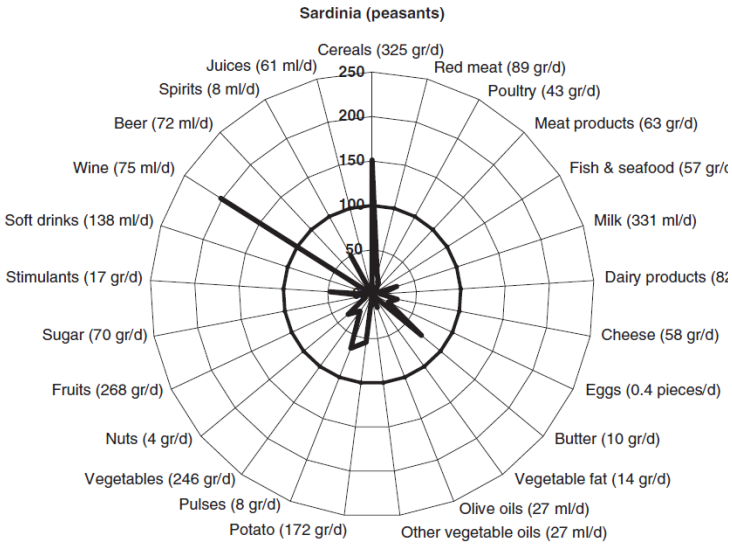
Pes et al., 2008

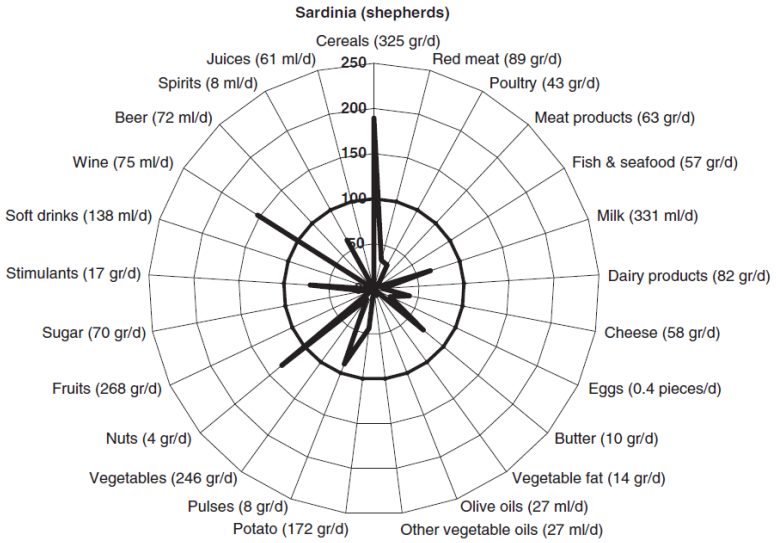
Nutrition and longevity in Sardinia

REVIEW

Male longevity in Sardinia, a review of historical sources supporting a causal link with dietary factors

GM Pes[1], F Tolu[2], MP Dore[1], GP Sechi[1], A Errigo[1], A Canelada[3] and M Poulain[4,5]

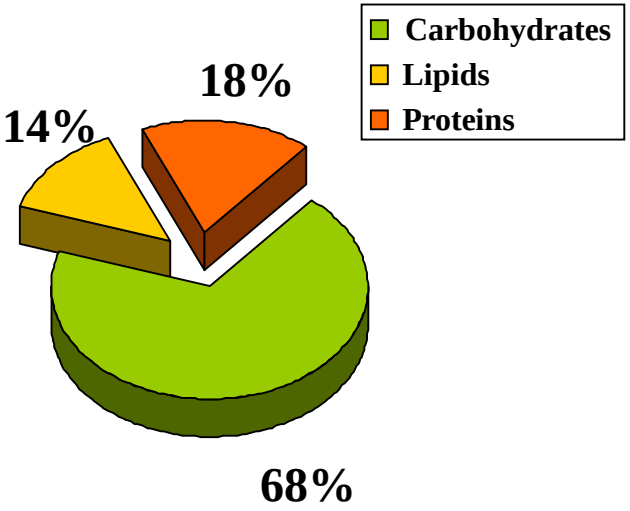




Pes et al., 2014

Table 2. Everyday consumption of food in 28 peasant and 17 shepherd families in the Barbagia district in the pre-WWII era[11]

	Peasants	*Shepherds*
Proteins (g)		
Animal	19.5 (16.8%)	34.6 (29.3%)
Vegetable	96.5 (83.2%)	83.7 (70.7%)
Total	116.0	118.3
Fats (g)		
Animal	32.1 (74.8%)	46.6 (86.8%)
Vegetable	10.8 (25.2%)	7.1 (13.2%)
Total	42.9	53.7
Carbohydrate (g)	469.0	398.8
Energy (kcal)		
Without wine	2756.1	2608.8
With wine	2905.2	2719.6



Pes *et al.*, European Journal of Clinical Nutrition, 2014

Quality of food

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Covariates	BZ (mean ± SD)	Rest of Sardinia (mean ± SD)	OR (95% CI)	*P* value
Diet score (1–5)	2.6 ± 1.1	2.4 ± 0.8	1.94 (1.29–2.90)	0.004
Meat consumption (servings/person/month)	5.09 ± 3.1	5.10 ± 3.7	0.88 (0.79–1.10)	0.538
Wine consumption (lt/person/yr)	79.3 ± 75.7	89.6 ± 62.4	0.98 (0.97–1.02)	0.337
Food production				
Wheat (hl/person/yr)	1.06 ± 1.61	1.54 ± 1.79	0.85 (0.67–1.04)	0.215
Barley (hl/person/yr)	0.92 ± 0.75	0.52 ± 0.44	2.16 (1.11–5.08)	0.031
Nuts (kg/person/yr)	0.27 ± 0.62	0.07 ± 0.11	1.06 (0.18–5.91)	0.408
Cheese (kg/person/yr)	7.4 ± 4.6	5.2 ± 6.0	1.03 (0.80–1.33)	0.780
Occupation/lifestyle				
Pastoralism score	2.8 ± 1.4	1.6 ± 1.0	1.69 (1.30–2.20)	0.0001
Average terrain's slope (%)	15.2 ± 6.6	11.5 ± 6.2	1.17 (1.10–1.26)	0.0001
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Cox and Snell "pseudo" R-squared = 0.307.

Pes et al., 2011

Goat milk

- High nutritional value
  - Improves lipid metabolism
  - Hypocholesterolemic effect
  - Short- and medium-chain saturated fatty acids
    - *Butyric (C4:0)*
    - *Caproic (C6:0)*
    - *Caprylic (C8:0)*
    - *Capric (C10:0)*
  - ↑ Carnitine
  - ↑ Calcium
  - ↑ Selenium
  - ↑ Zinc

Pes et al., 2011

Absence of stress?


Central Sardinia, 1908

Can the Elixir of Life be found in Sardinia?

الإكسير

Elixir of Life

ελιξίριο της ζωής

रसायन

長生不老藥

不老不死の薬


Thanks for your attention and
AKENTANNOS