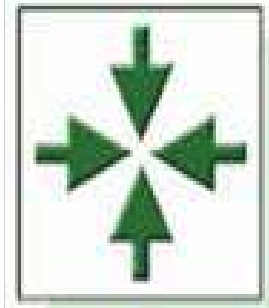

FONDAZIONE IRCCS
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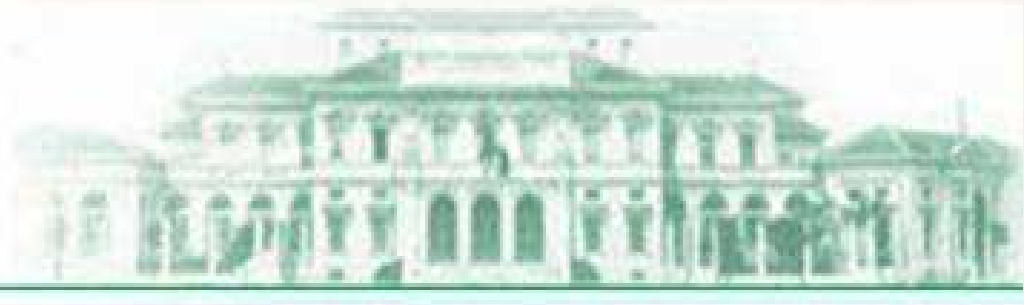
DEI TUMORI

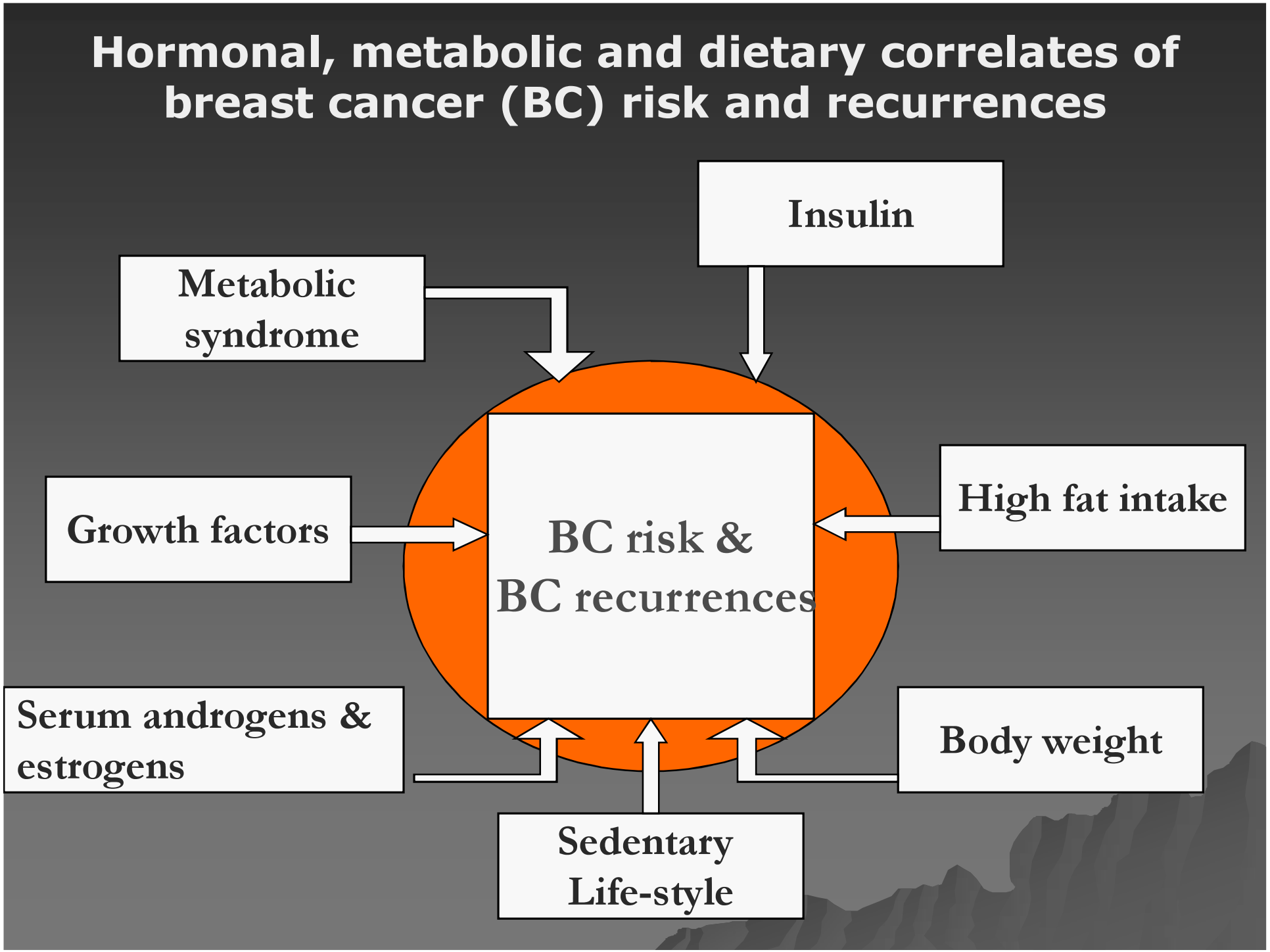


Nutritional advice to breast cancer survivors

ESMO Symposium on Cancer and Nutrition
Zurich, 2009

Patrizia Pasanisi, MD, MSc
Department of Preventive and Predictive Medicine
Epidemiology Unit

Hormonal, metabolic and dietary correlates of breast cancer (BC) risk and recurrences



Overweight & Obesity

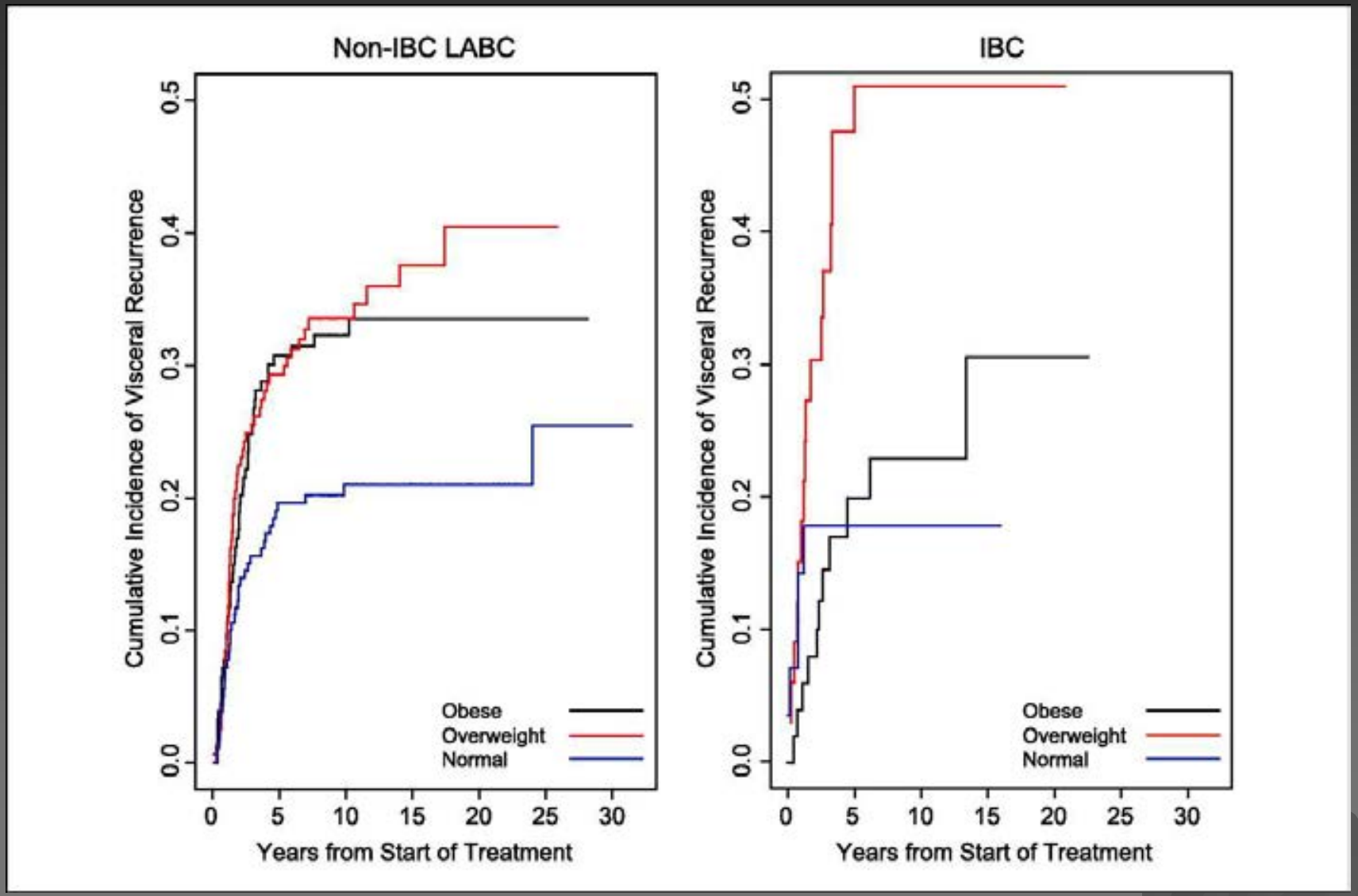
Overweight and obesity increase the risk of BC after menopause (WCRF,2007).

No association or slitghtly reduced BC risk before menopause. Overweight at menarche is associated with a lower risk of BC in adulthood (differentiation of breast epithelial cells?)

Preventing weight gain in adulthood would decrease the overall burden of BC

Obese BC patients have a poorer prognosis (Dawood S et al., 2008; Rock CL. Et al., 2002; Berclaz G. et al., 2004)

Body weight and prognosis

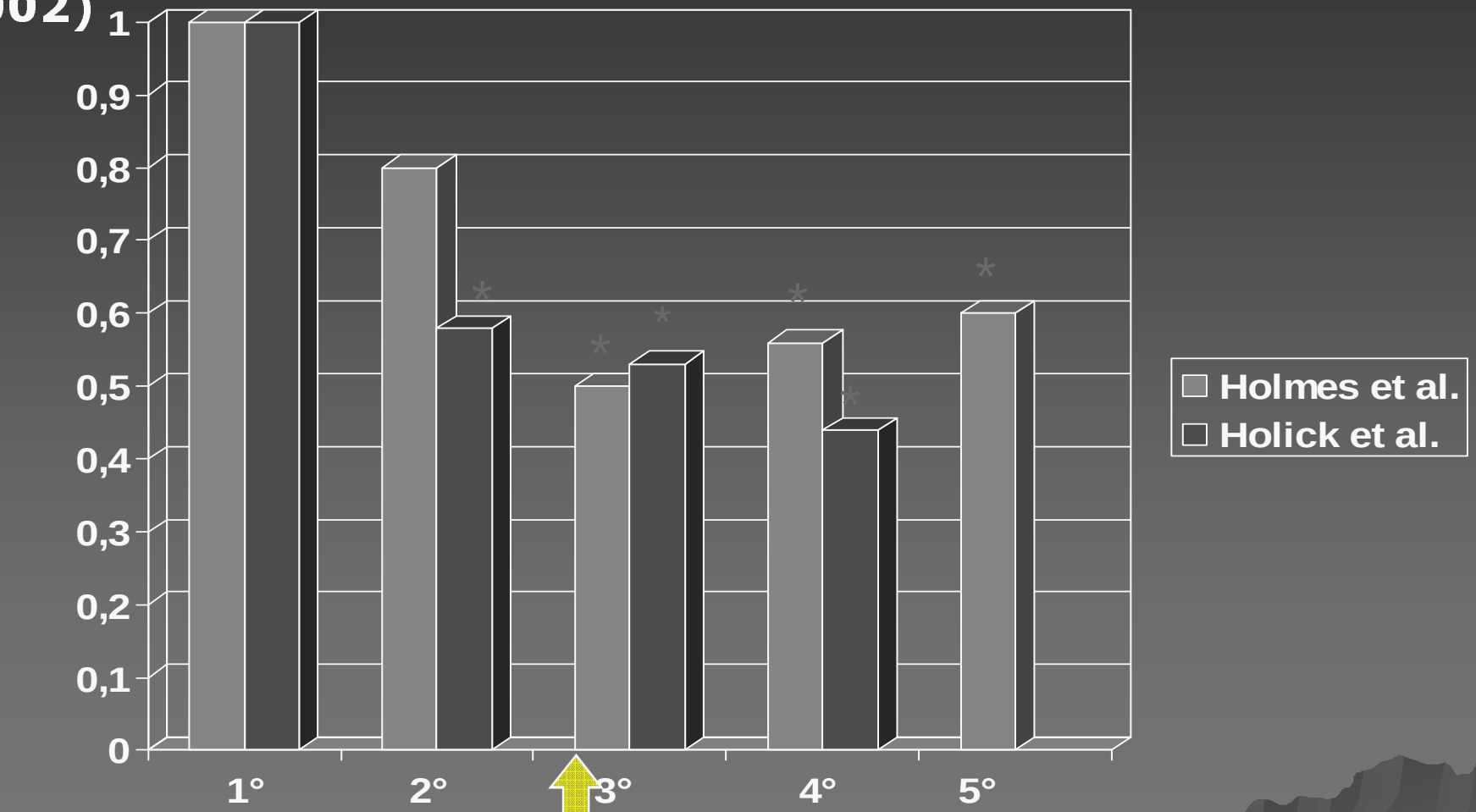


Dawood, S. et al. Clin Cancer Res 2008;14:1718-1725

AACR Clinical Cancer Research

Physical activity

A sedentary lifestyle is associated with an increased risk of BC both before and after menopause (Vainio H & Bianchini F., 2002)



Sedentary life-style

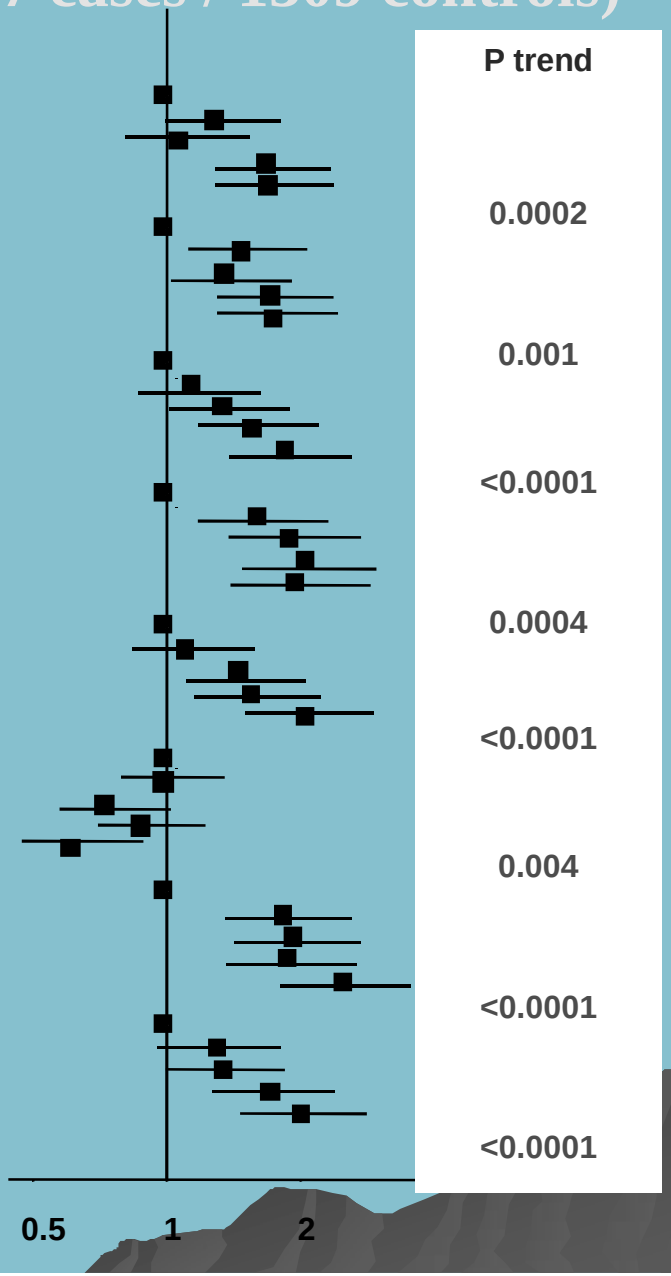
30 min/die of brisk walking

Sex hormones

Endogenous Hormones and subsequent Breast Cancer

- Before menopause
  high androgens
  low progesterone
- After menopause
  high androgens
  high estrogens

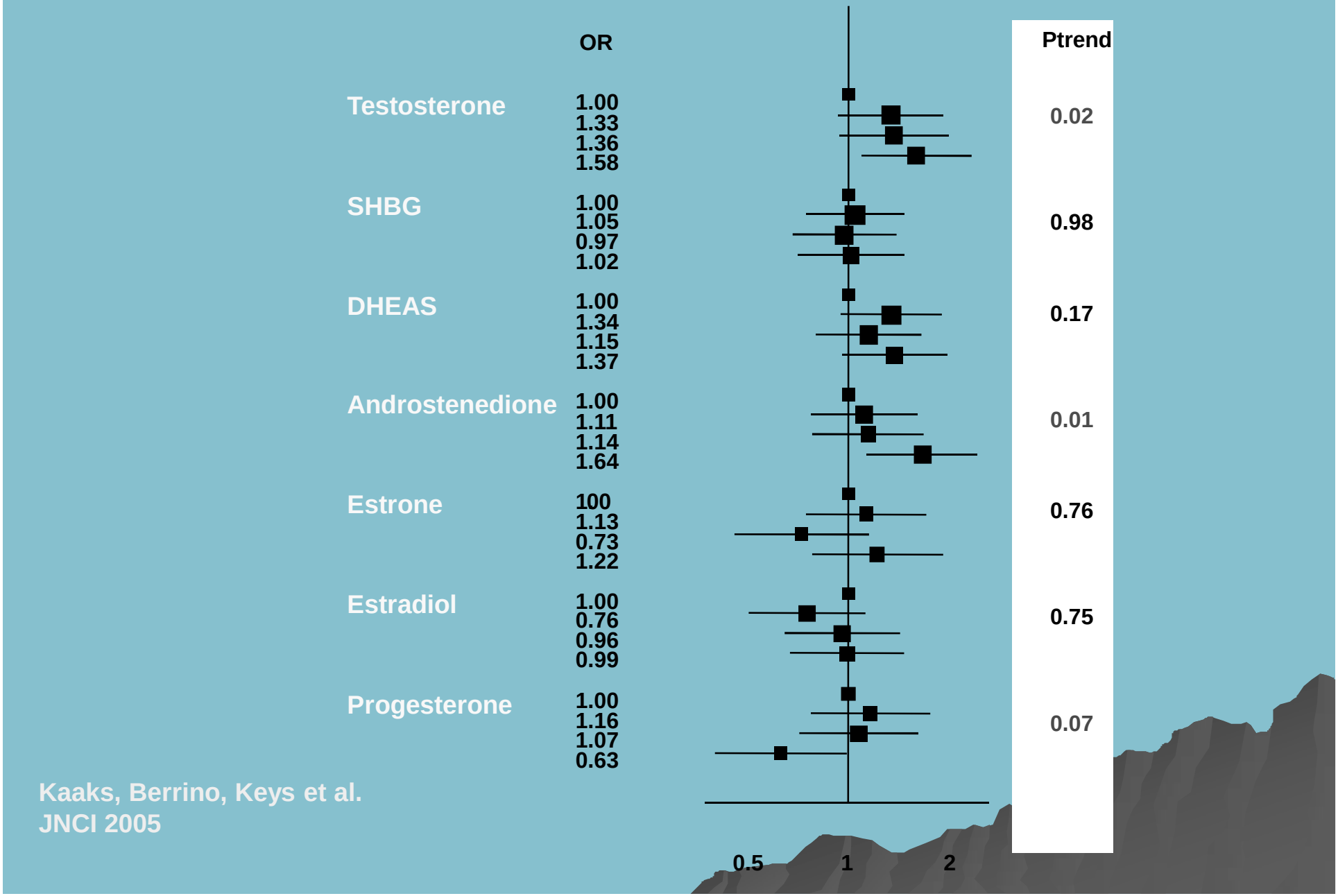
Postmenopausal Serum Sex Steroids and BC Risk
The EPIC Study; (677 cases / 1309 controls)



Kaaks R. et al. , ERC 2005

Premenopausal Serum Sex Steroids and Breast Cancer Risk

The EPIC Study; (416 cases, 815 controls)



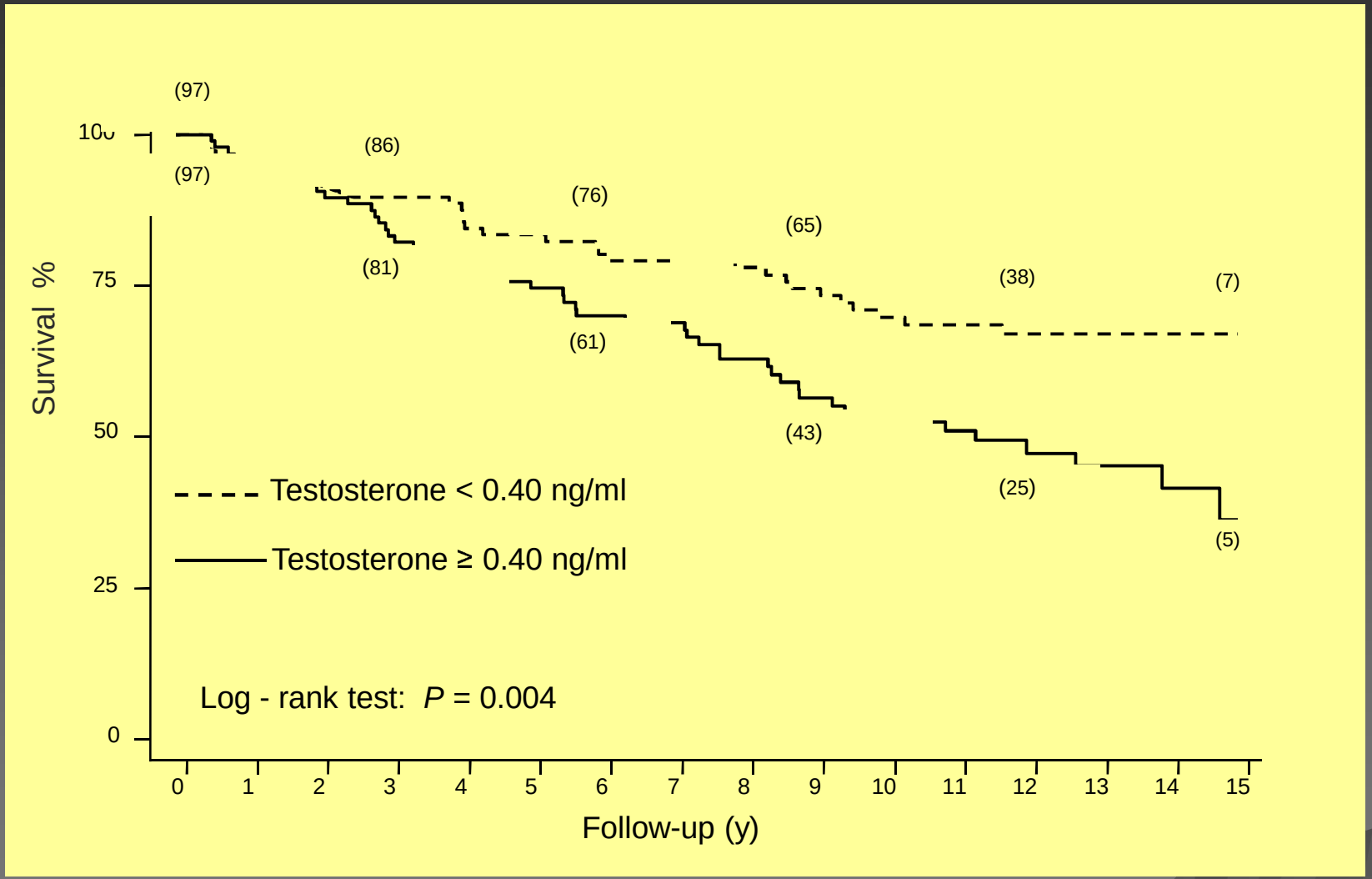
Kaaks, Berrino, Keys et al.
JNCI 2005

ORDET: Premenopausal Breast Cancer Risk by Levels of Sex Steroid Hormones

	Serum Concentration (Tertiles)			
	Low#	*Middle*	*High*	*P trend*
Total Testosterone	1	0.98 (0.35-2.77)	2.63 (0.73-9.50)	0.080
Free Testosterone	1	2.01 (0.63-6.40)	3.26 (0.94-5.32)	0.055
Progesterone	1	0.56 (0.19-1.64)	0.15 (0.04-0.62)	0.006

Reference category; adjusted for age, BMI and length of the cycle in which the blood sample was taken, the time interval between the sampling day and the subsequent menses, and the serum levels of LH and FSH (Micheli et al Int J Cancer 2004)

Disease free survival by testosterone level among 194 post-menopausal BC patients who did not receive adjuvant treatments



NOTE. Cancer-event-free survival was estimated by the Kaplan-Meier method; events considered were: local relapse, regional relapse, distant metastases, ipsilateral breast cancer, contralateral breast cancer, and second primary cancer at non breast site. In parentheses the number of women at risk. (Micheli et al JCO, June 2007)

DIANA-2: Hazard ratio of recurrence according to baseline hormonal values

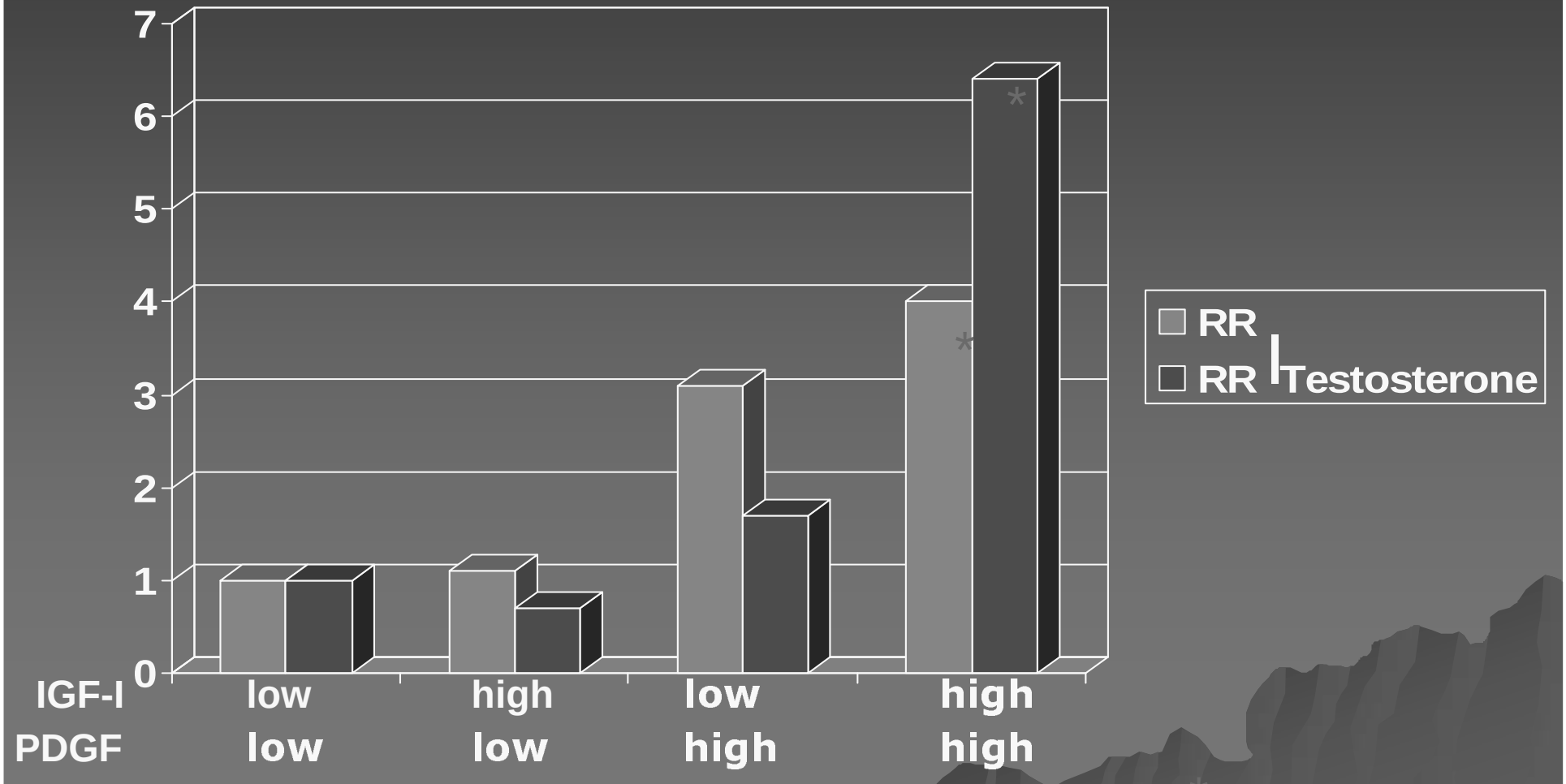
	HR (upper vs lower third) *	HR (upper vs lower third) **	Pvalue
Testosterone	7.82		0.00
Estradiol	1.96	0.99	0.98
SHBG	0.53	0.73	0.49
Insulin	1.59	1.91	0.18
IGF-I	1.34	1.10	0.83
Pdgf	1.93	2.19	0.09
Metabolic syndrome	2.69	3.01	0.02

* Adjusted for T, N, ER, PR ** adjusted also for testosterone

(Berrino F. et al., Int J Cancer 2005; Pasanisi P. et al Int J Cancer 2006)

Growth factors

RR of breast cancer recurrence by serum levels of IGF-I e PDGF (above or under the median)

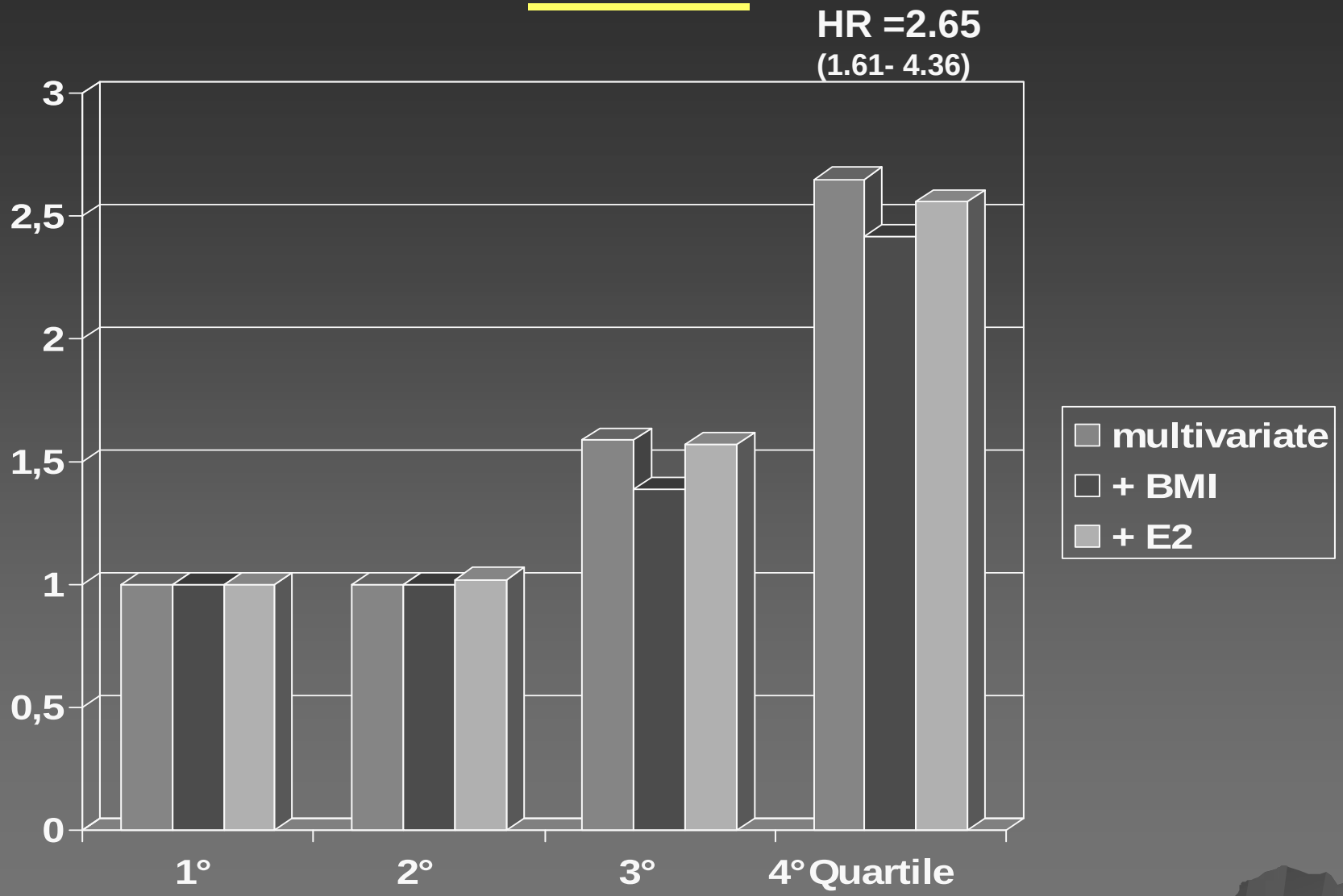


Pasanisi P. et al., CEBP 2008

Cohort studies on serum IGF-I levels and BC in premenopausal women

Study	Author	Year	n°Ca/Co	RR	(IC 95%)
Nurses	Hankinson	1998	76/105	2.3	(1.1-5.2)
extension	Shernhammer	2005	218/281	1.6	(2.0-2.6)
	<50 ys		60/ 78	4.6	(1.8-12)
extension	Shernhammer	2005	155/193	3.8	(1.7-8.3)
NY WH	Toniolo	2000	172/486	1.6	(0.9-2.8)
	<50 ys		96/280	2.3	(1.1-4.9)
extension	Rinaldi	2005	138/259	1.9	(1.0-3.7)
ORDET	Muti	2002	69/265	3.1	(1.1-8.6)
Kaiser P	Krajcik	2002	66/ 66	3.5	(0.3-1.4)
Umeå-Malmö	Kaaks	2002	116/330	0.6	(03-1.4)
HPR	Decensi	2003	45/220	1.9	(0.9-4.3)
Guernsey	Allen	2005	70/209	1.2	(0.6-2.5)
Washington C.	Rollison	2006	175/175	1.4	(08-2.4)
EPIC	Rinaldi	2006	250/491	1.0	(0.6-1.8)
			escluding BC diagnoses within 2 years	1.9	(1.0-3.4)

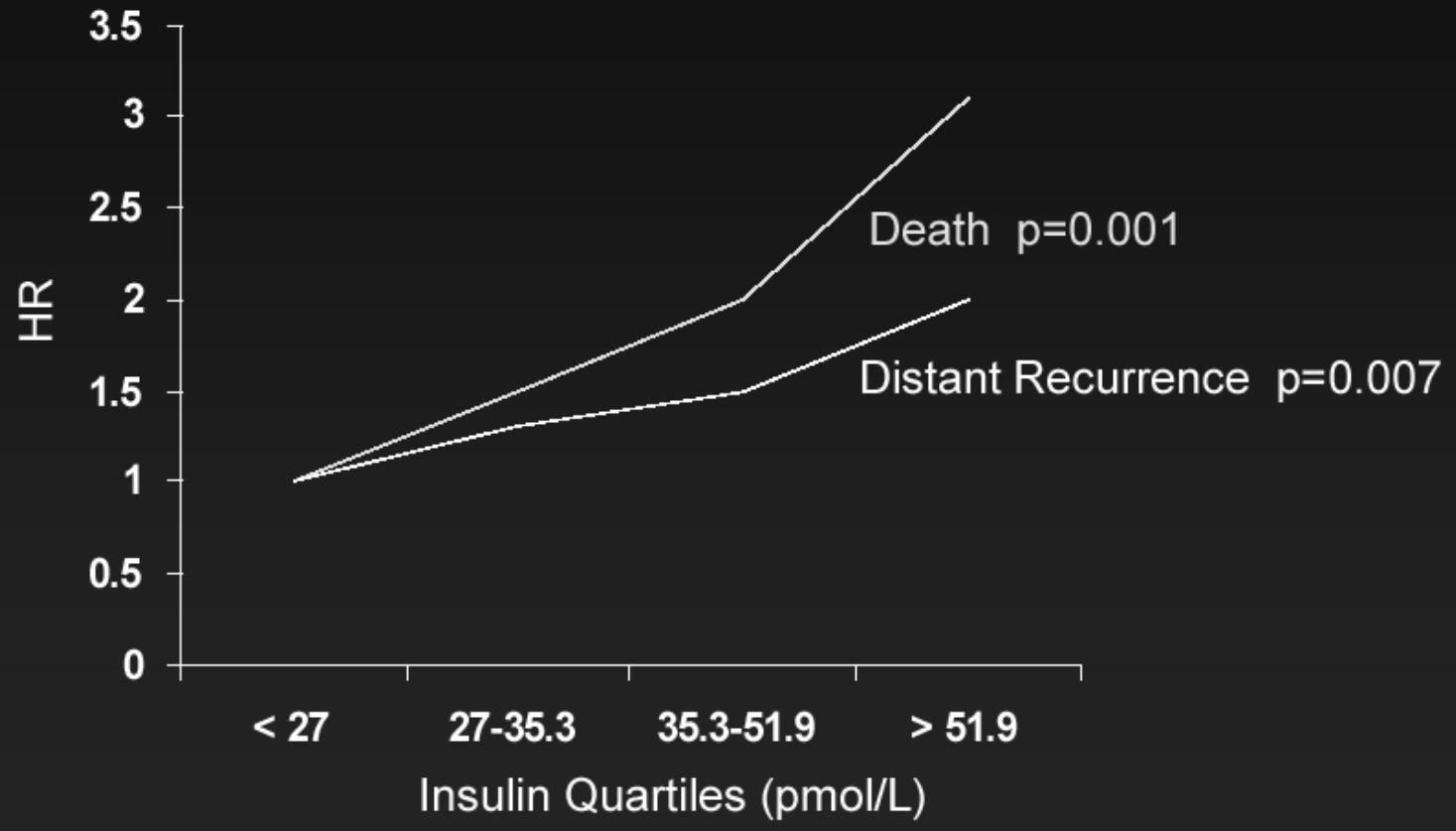
Insulin



WHI-OS JNCI 2009: 835 Post-menopausal BC women

HR by serum level of insulin

Insulin and Breast Cancer Prognosis



Goodwin PJ et al. J Clin Oncol 2002;20:42-51

Dietary fats

WINS, Women Initiative on Nutrition Study

Chlebowsky 2005 (ASCO), 2006 (JNCI)

	N of randomized patients	N. of recurrences	RR	p
Low fat	975	96	0.76	0.034
Control	1462	181		

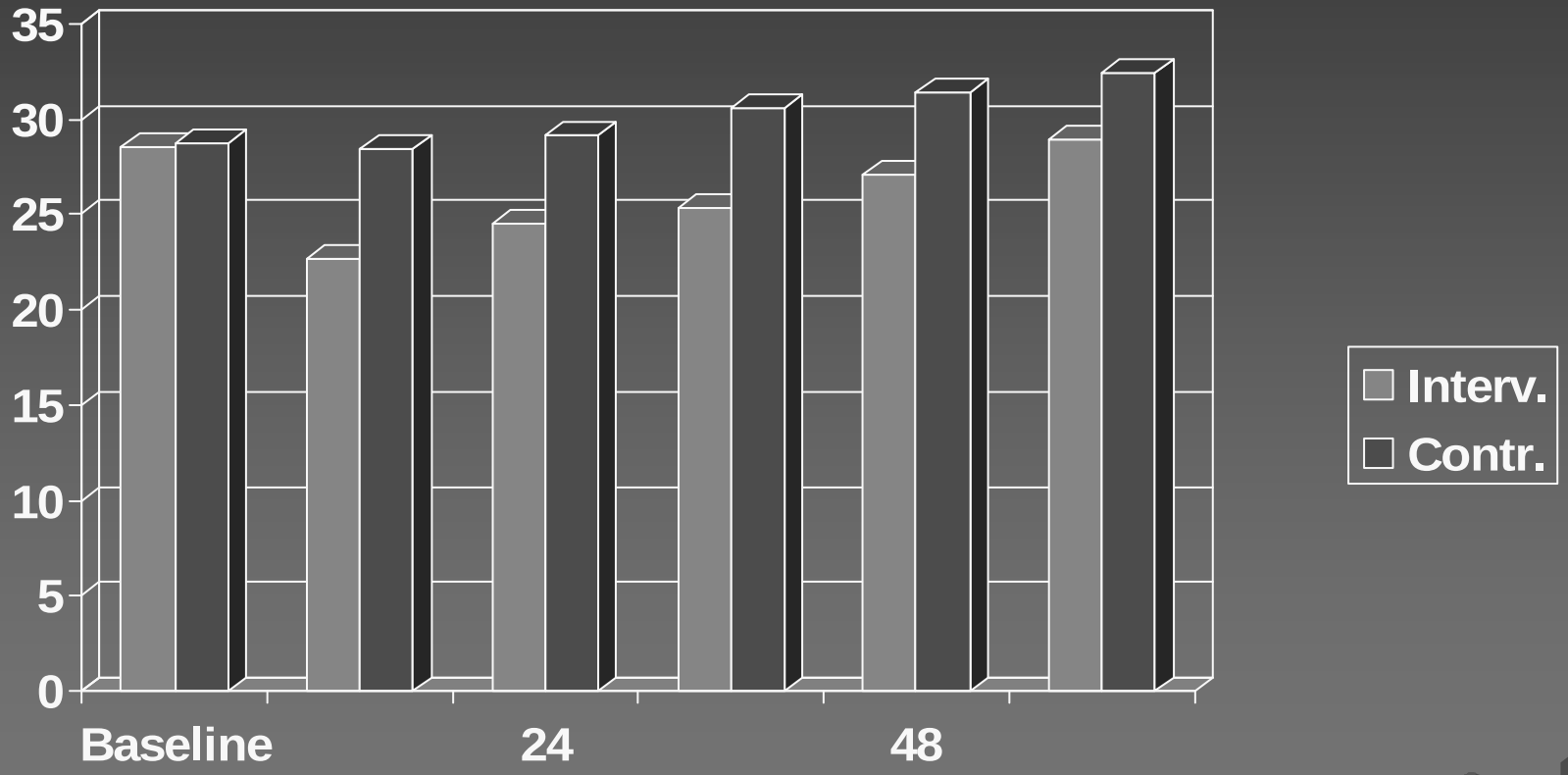
ER positive	0.85	0.277
ER negative	0.58	0.018
ER - & PR -	0.44	0.004

WHEL, Women Healthy Eating & Living
Pierce 2007 (JAMA)

	N.BC patients	N. of recurrences	RR	P
◆ Intervention*	1537	256		
			0.96	0.63
◆ Controls	1551	262		
◆ ER+ & PR+			0.92	
◆ ER - & PR -			1.13	
P of interaction				0.88

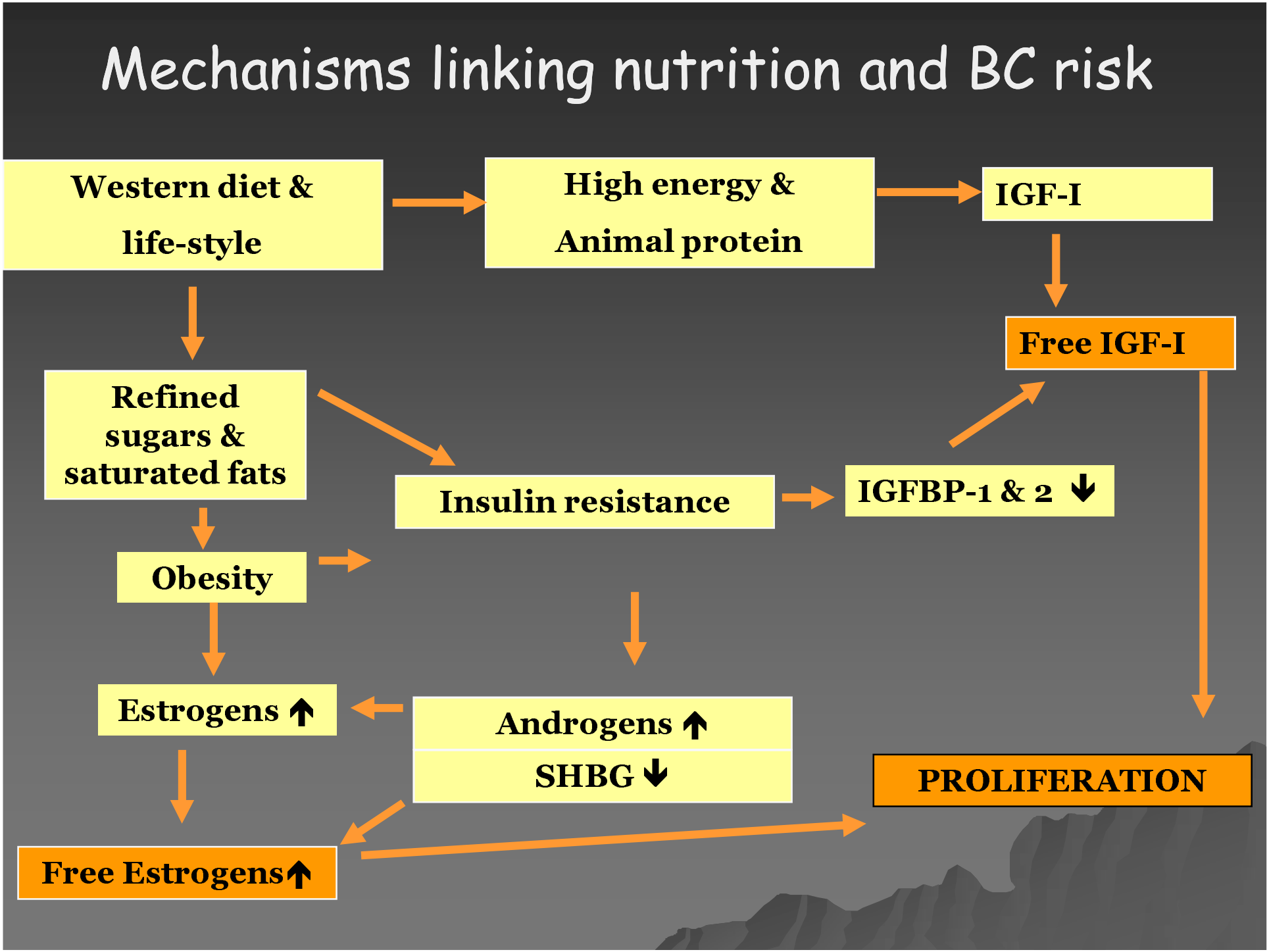
*** Diet aimed to lower fats and to increase vegetable and fruit**

WHEL: energy from fats %



Weight change: +1.1 -0.1 Kg

Mechanisms linking nutrition and BC risk



DIANA (DIet and ANdrogens)-5

Randomized controlled trial
to test the efficacy of dietary change and physical activity
to prevent the development of recurrences
in BC patients estimated to be at high risk
on the basis of their hormonal or metabolic pattern

Recruitment of about 4000 BC patients

Selection of 2000 women at high risk

Randomization
by age, estrogens receptors, tumour stage

Intervention

WCRF recommendations

DIANA-5

- To Riduce calories, through the preferred consumptions of highly satiating foods, such as unrefined cereals, legumes and vegetables.
- To reduce high glycaemic index food, such as refined flours, potatoes, white rice, corn flakes, and high insulinemic foods, such as sugar and milk, preferring instead whole grain rice, barley, millet, oat, spelt, quinoa and buckwheat, legumes (any type including traditional soy products), vegetables (any type, except potatoes)
- To reduce sources of saturated fat (red and processed meat, milk and dairy products) preferring instead unrefined vegetable fats, such as olive oil, nuts and oleaginous seeds.
- To reduce proteins, mainly animal (except fish)
- To achieve and maintain regular participation in a moderate intensity physical activity (approximately 3 to 5 METs) program of 210 minutes/week (30 min on average per day) over at least 3 days /week

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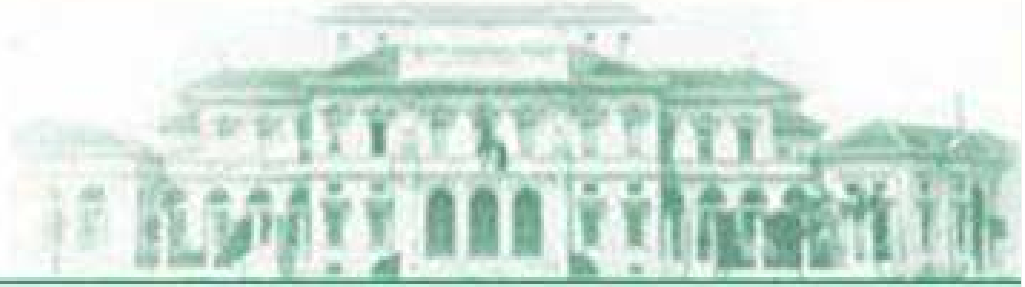

Thank you for your kindly attention!

Patrizia Pasanisi, MD, MSc
Department of Preventive and Predictive Medicine
Epidemiology Unit