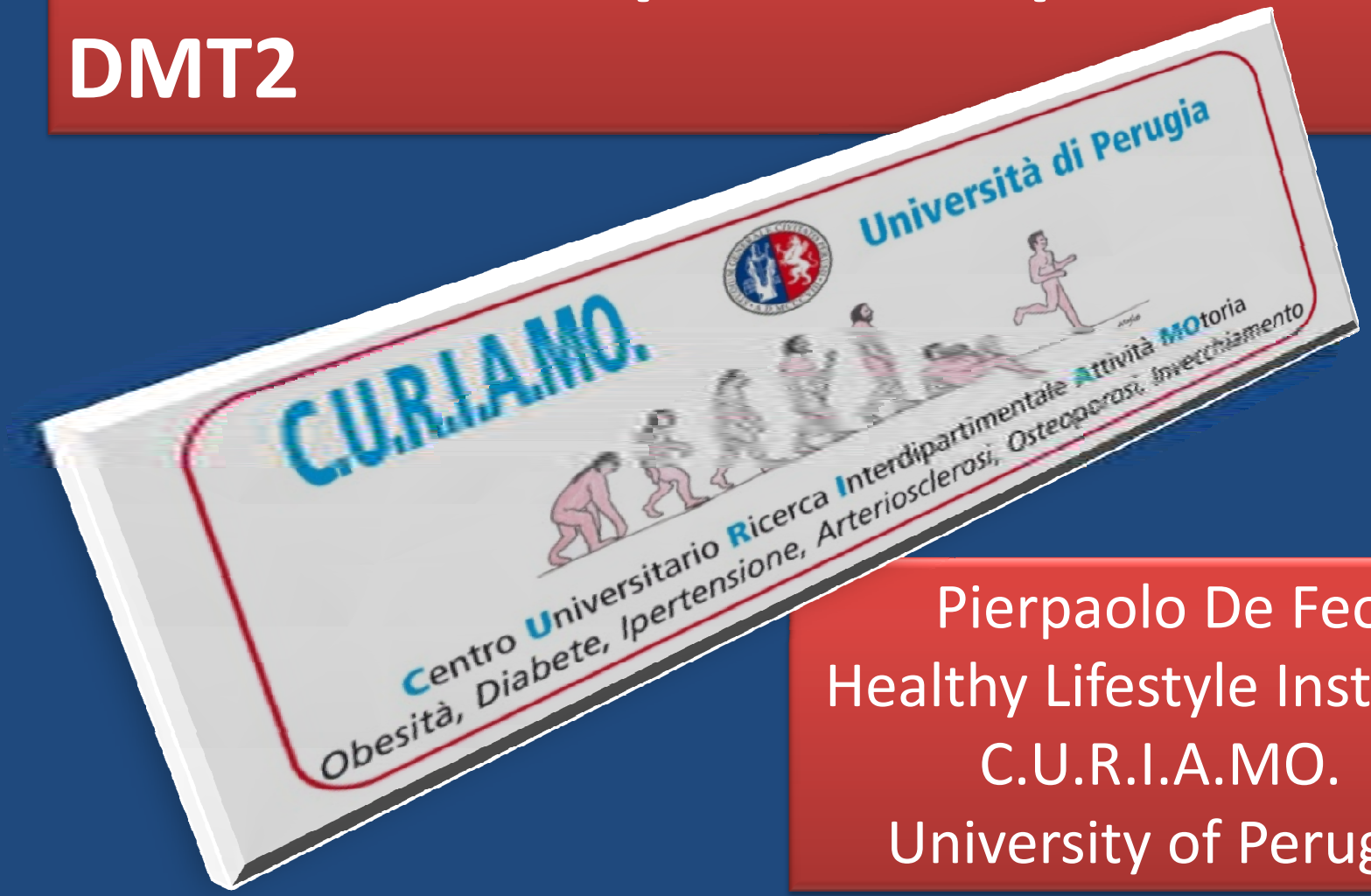
Un nuovo approccio di modello ambulatoriale per la terapia del DMT2



Pierpaolo De Feo
Healthy Lifestyle Institute
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University of Perugia

ORIGINAL ARTICLE

Is Physical Exercise a Core Therapeutical Element for Most Patients With Type 2 Diabetes?

Pierpaolo De Feo, md[1]
Peter Schwarz, md[2]

(5,17,18). In subjects with type 2 diabe

The opinion of Scientific Societies

Position statements of the American Diabetes Association, American College of Sports Medicine, and American Heart Association assert that exercise therapy should be part of a structured lifestyle intervention in type 2 diabetes and include both aerobic and resistance training

Marwick TH, Hordern MD, Miller T, Chyun DA, Bertoni AG, Blumenthal RS, Philippides G, Rocchini A; Council on Clinical Cardiology, American Heart Association Exercise, Cardiac Rehabilitation and Prevention Committee; Council on Cardiovascular Disease in the Young; Council on Cardiovascular Nursing; Council on Nutrition, Physical Activity and Metabolism; Interdisciplinary Council on Quality of Care and Outcomes Research.. Exercise training for type 2 diabetes mellitus: impact on cardiovascular risk: a scientific statement from the American Heart Association. Circulation 2009; 119: 3244-262.

American College of Sports Medicine and the American Diabetes Association (2010). Joint Position Statement: Exercise and Type 2 Diabetes. Medicine & Science in Sports & Exercise 2010;42: 2282-2303.

1. Boulé NG, Haddad E, Kenny GP, Wells GA, Sigal RJ. Effects of exercise on glycemic control and body mass in[illegible]pe 2 diabetes mellitus: a meta-analysis of controlled clinical trials. JAMA 2001; 286: 1218-27.
2. Boulé NG, Kenny GP, Haddad E, Wells GA, Sigal RJ. Meta-analysis of the effect of structured exercis[illegible] cardiorespiratory fitness in Type 2 diabetes mellitus. Diabetologia 2003;46: 1071-81.
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9. Church TS, Blair SN, Cocreham S, Johannse[illegible], Kramer K, Mikus CR, Myers V, Nauta M, Rodarte RQ, Sparks L, Thompson A, Earnest CP. Effects of aero[illegible]ce training on hemoglobin A1c levels in patients with type 2 diabetes: a randomized controlled trial. JAMA 20[illegible]2.
10. Balducci S, Zanuso S, Nicolucci A[illegible]allo S, Cardelli P, Fallucca S, Alessi E, Fallucca F, Pugliese G; Italian Diabetes Exercise Study (IDES) Investig[illegible]an intensive exercise intervention strategy on modifiable cardiovascular risk factors in subjects with ty[illegible]ellitus: a randomized controlled trial: the Italian Diabetes and Exercise Study (IDES). Arch Intern Med 2010[illegible]
11. Umpierre D, Ribei[illegible]K, Leitão CB, Zucatti AT, Azevedo MJ, Gross JL, Ribeiro JP, Schaan BD. Physical activity advice only or structu[illegible]ining and association with HbA1c levels in type 2 diabetes: a systematic review and meta-analysis. JA[illegible]1790-9.
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Exercise and diabetes: when the evidences talk:

1. Boulé NG, Haddad E, Kenny GP, Wells GA, Sigal RJ. Effects of exercise on glycemic control and body mass in type 2 diabetes mellitus: a meta-analysis of controlled clinical trials. JAMA 2001; 286: 1218-27.
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- Improves body composition
- Prevents DM2
- Improves glucose control in DM2
- Reduces blood pressure
- Improves endothelial function
- Reduces low grade inflammation

Modifica dello stile vita

Article

Strategies to enhance compliance to physical activity for patients with insulin resistance

Alison Kirk,[a] Pierpaolo De Feo[b]

[a]Institute of Sport and Exercise, University of Dundee, Dundee, Scotland DD1 4HN, United Kingdom.

[b]Department of Internal Medicine, Section Internal Medicine, Endocrine and Metabolic Sciences, University of Perugia, Italy.

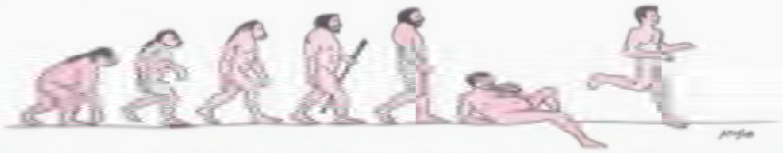
Corresponding author (email: a.kirk@dundee.ac.uk)

Published on the web 1 May 2007.

Applied Physiology, Nutrition, and Metabolism, 2007, 32(3): 549-556, 10.

Un intervento efficace richiede un approccio multidisciplinare, integrato e intensivo che tenga conto dei punti di forza e debolezza della persona

C.U.R.I.A.MO. Università di Perugia



Centro Universitario Ricerca Interdipartimentale Attività MOtoria

Obesità, Diabete, Ipertensione, Arteriosclerosi, Osteoporosi, Invecchiamento

Healthy Lifestyle Institute C.U.R.I.A.MO. Università di Perugia

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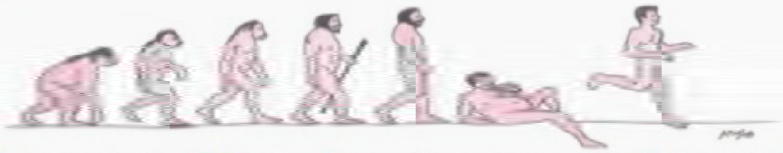

Centro Universitario Ricerca Interdipartimentale Attività MOtoria

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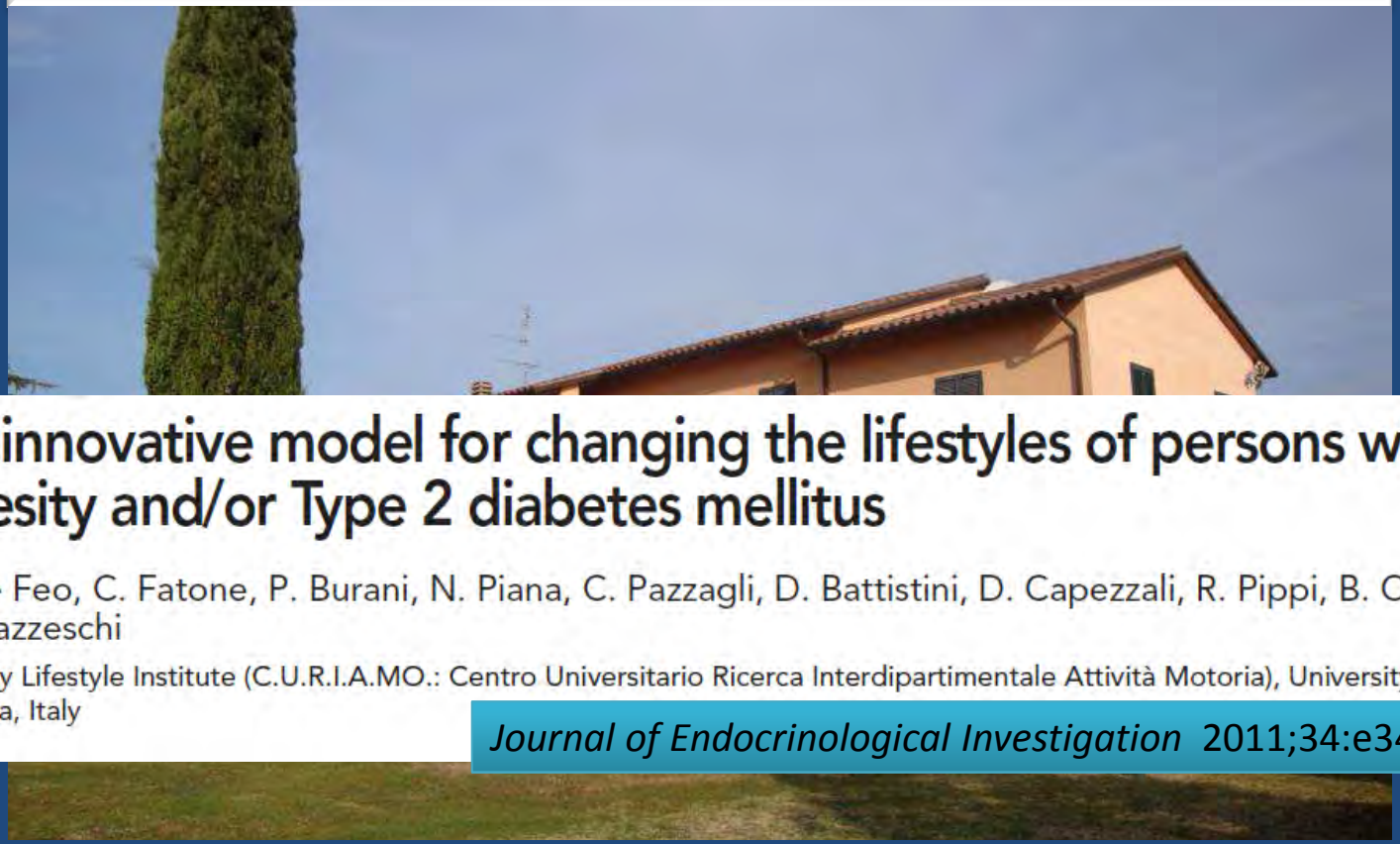
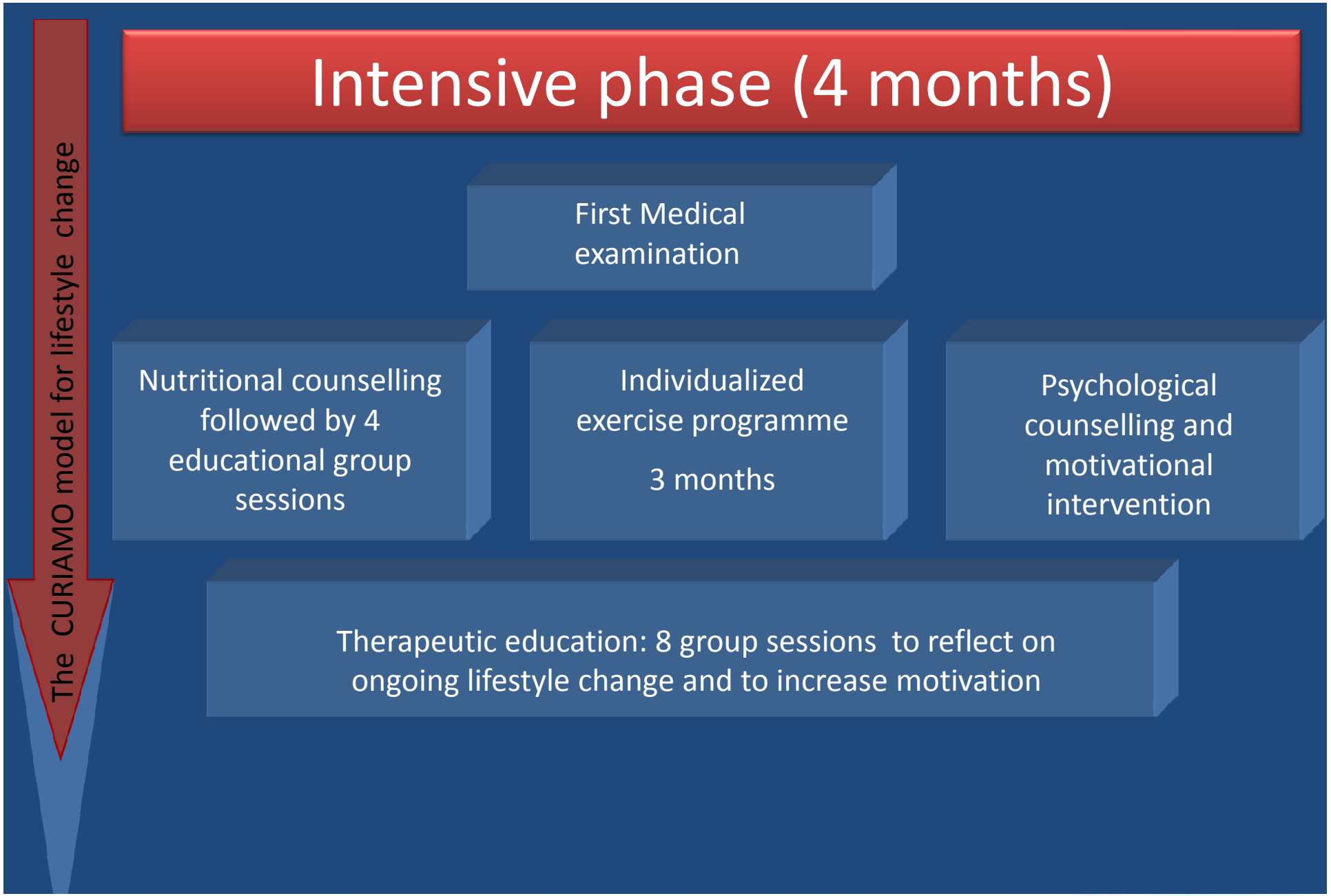


An innovative model for changing the lifestyles of persons with obesity and/or Type 2 diabetes mellitus

P. De Feo, C. Fatone, P. Burani, N. Piana, C. Pazzagli, D. Battistini, D. Capezzali, R. Pippi, B. Chipi, and C. Mazzeschi

Healthy Lifestyle Institute (C.U.R.I.A.MO.: Centro Universitario Ricerca Interdipartimentale Attività Motoria), University of Perugia, Perugia, Italy

Journal of Endocrinological Investigation 2011;34:e349-e354


Intensive phase (4 months)
The CURIAMO model for lifestyle change
First Medical examination
Nutritional counselling followed by 4 educational group sessions
Individualized exercise programme
3 months
Psychological counselling and motivational intervention
Therapeutic education: 8 group sessions to reflect on ongoing lifestyle change and to increase motivation

Support for long-term adherence to lifestyle change

Trekking and walking adventures

Step by step… Italy's Coast to Coast
390 km in 14 days
two editions in spring 2010 and 2011

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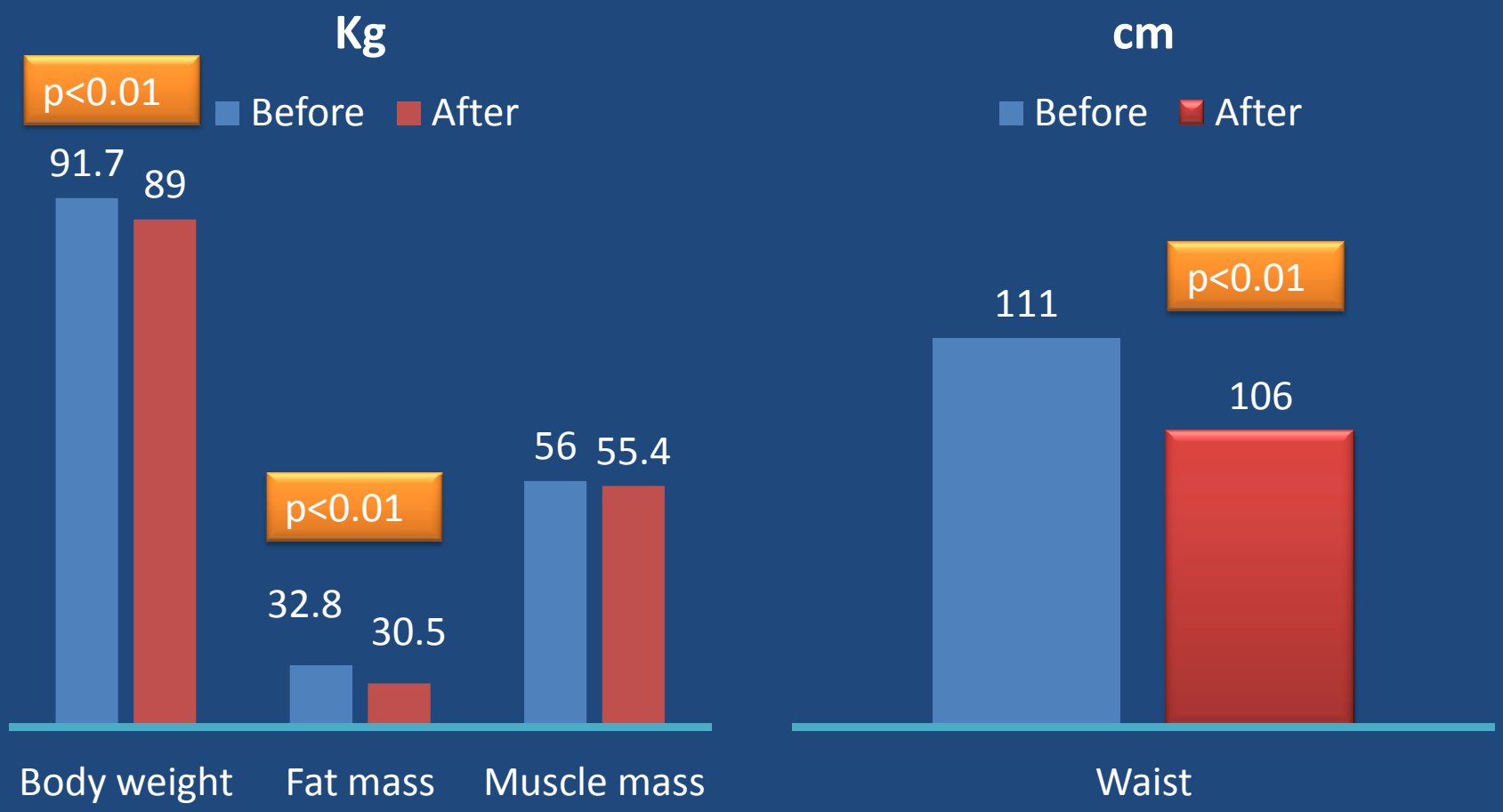
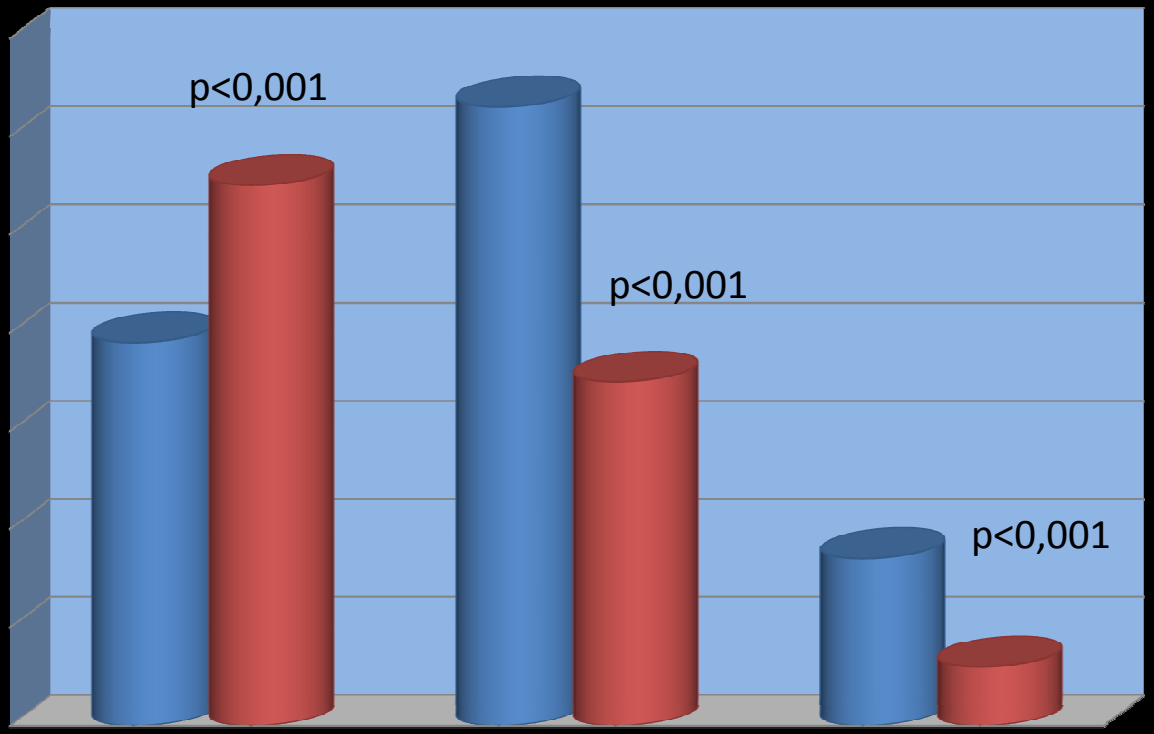
Changes in body composition



Changes in biochemical parameters

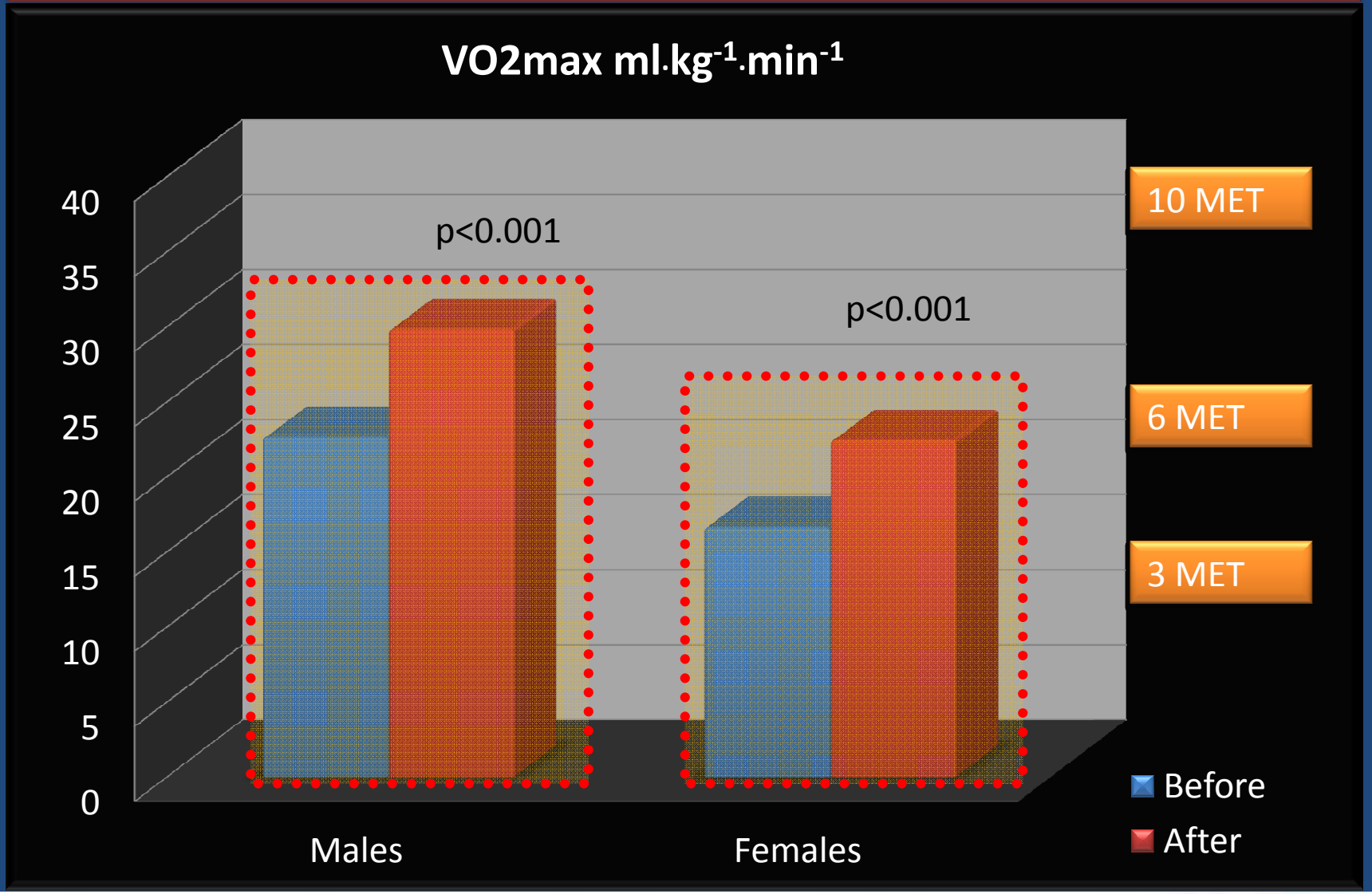
Parameter	**Before** (mean±SD)	**After** (mean±SD)	**p =**
Fasting PG mg %	148±41	136±41	**0.0002**
HBA1c %	7.4±1.4	6.7±1.1	**0.00000**
Insulinemia mU/L	17.4±3,6	14.3±3.1	0.1536
Total Chol. mg%	197±39	194±39	0.2954
LDL Chol. mg%	116±33	118±31	0.4968
HDL Chol. mg%	47.4±11.5	46.8±11.2	0.1528
Triglycerides mg%	175±39	151±36	**0.0038**

Treadmill test 50% of reserve heart rate

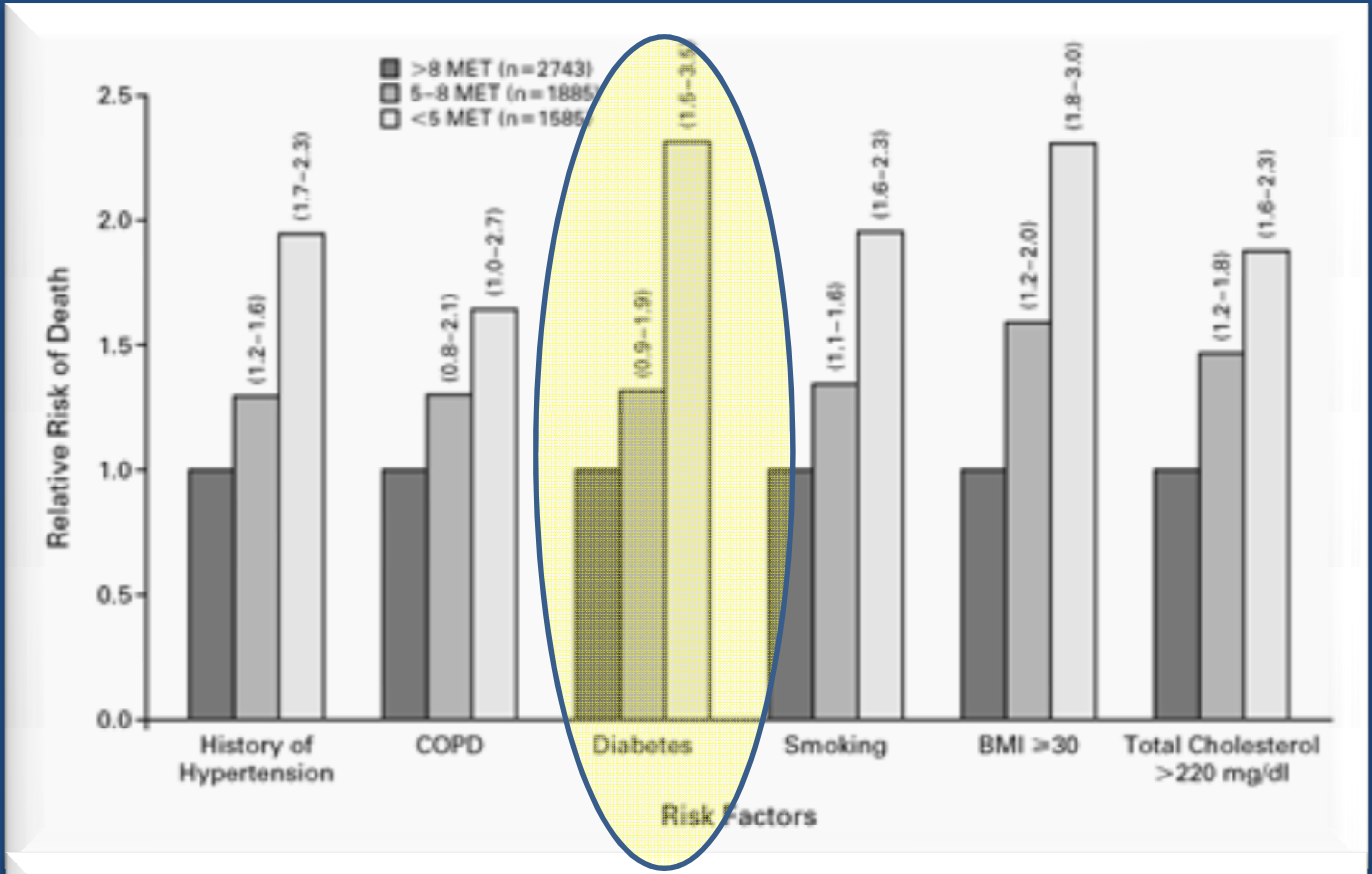


	speed km/h	blood lactate mM	LT/speed
before	3,90	6,3	1,7
after	5,50	3,5	0,6

CardioRespiratory Fitness (Rockport Fitness Test)

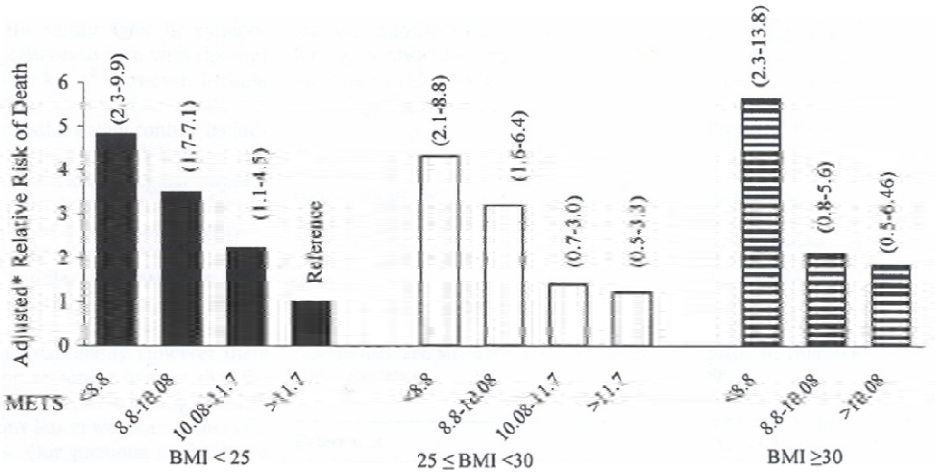


Exercise Capacity and All-Cause Mortality



Myers et al. N Engl J Med 346: 793, 2002

Exercise Capacity and All-Cause Mortality



T. Church et al. *Diabetes Care* 27, 2004 (2196 diabetic males, mean age 49 years)

An increase of 1 MET is associated with a reduction in all-cause mortality of 19%

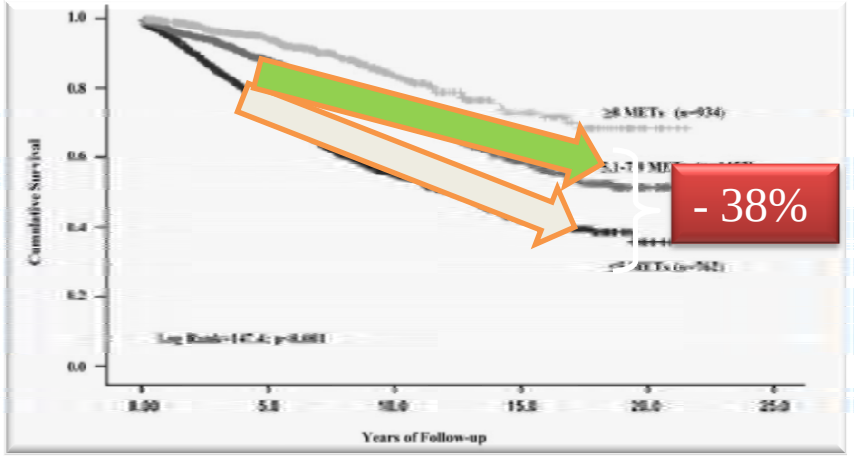
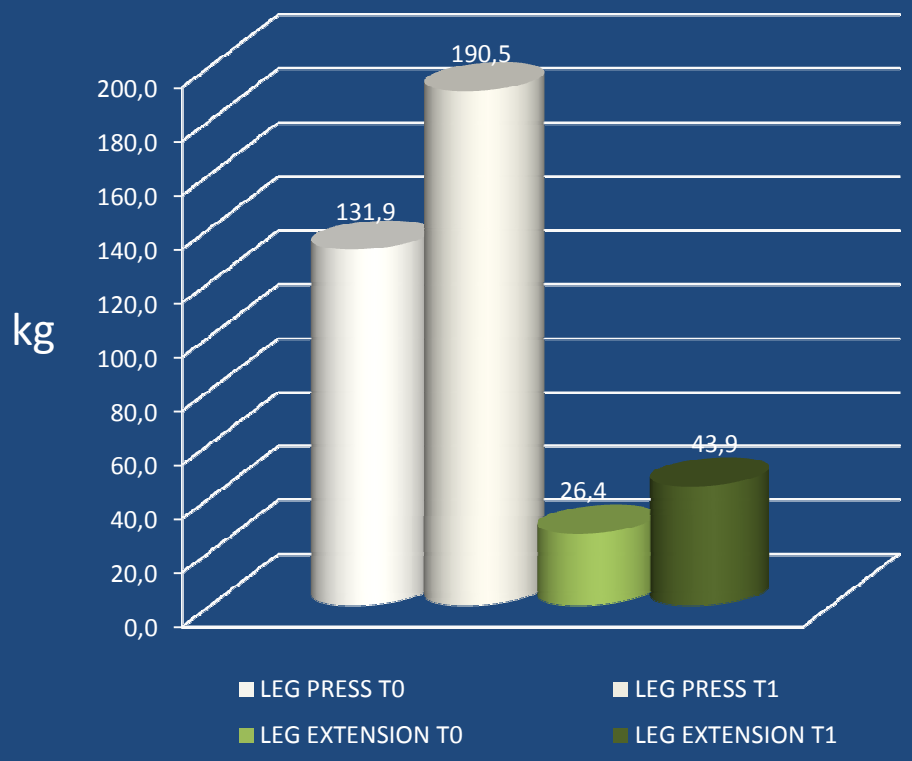


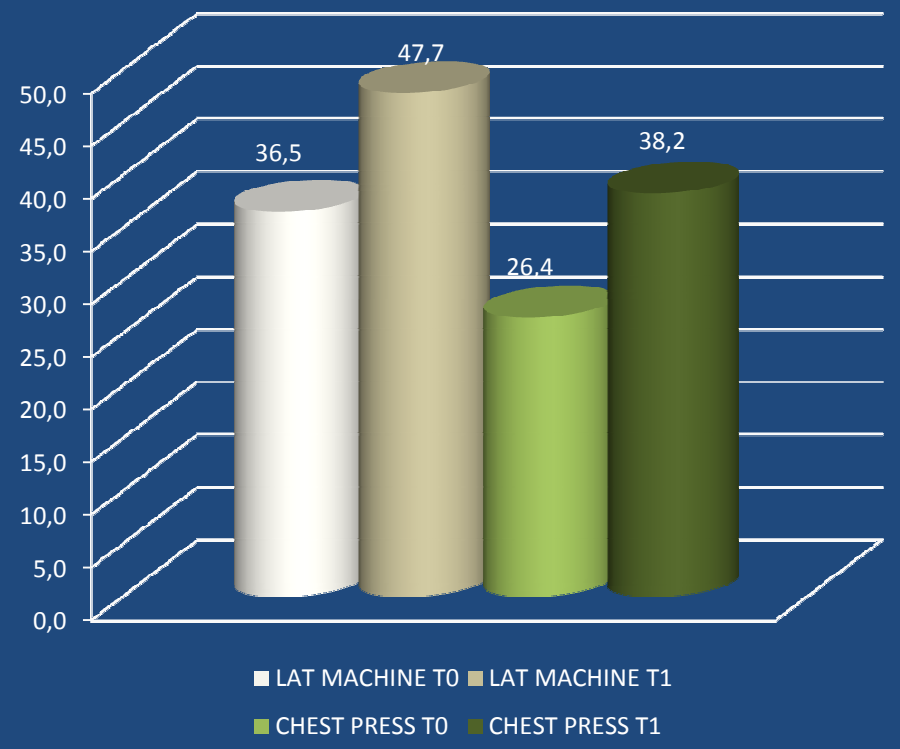
Table 2—*HRs (95% CI) for all-cause mortality according to exercise capacity*

	HR (95% CI)	P
All (*n* = 3,148)		
Peak exercise capacity (for each 1-MET increment)	0.79 (0.76–0.82)	<0.001
Adjusted for age and BMI	0.82 (0.79–0.86)	<0.001
Adjusted for age, BMI, cardiovascular risk factors, CVD, and cardiovascular medications	0.84 (0.81–0.87)	<0.001
Caucasians (*n* = 1,445)		
Peak exercise capacity (for each 1-MET increment)	0.77 (0.73–0.82)	<0.001
Adjusted for age and BMI	0.81 (0.76–0.85)	<0.001
Adjusted age, BMI, cardiovascular risk factors, CVD, and cardiovascular medications†	0.81 (0.77–0.86)	<0.001

P. Kokkinos et al. *Diabetes Care* 32, 2009 (3148 diabetic males, mean age 61 years)

CHANGES IN **MUSCLE STRENGHT**



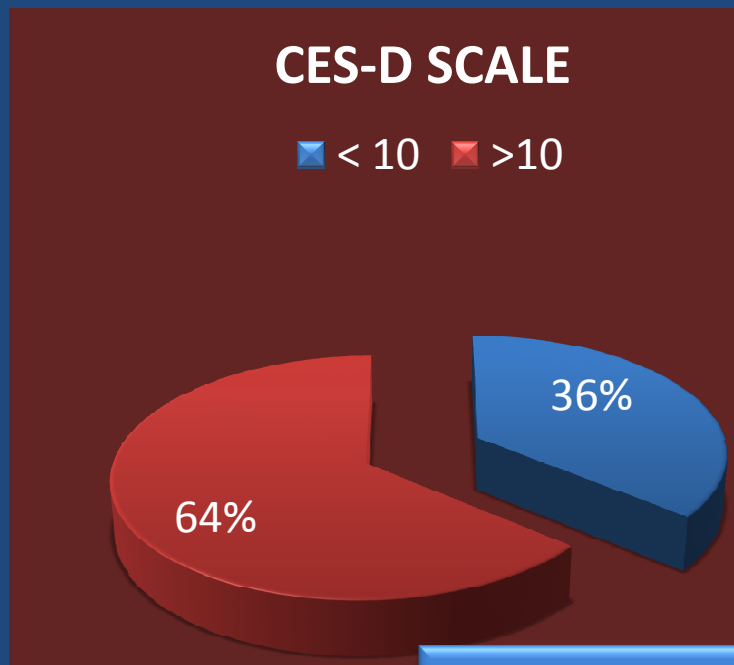


Average improvement ranging between 48-75 %

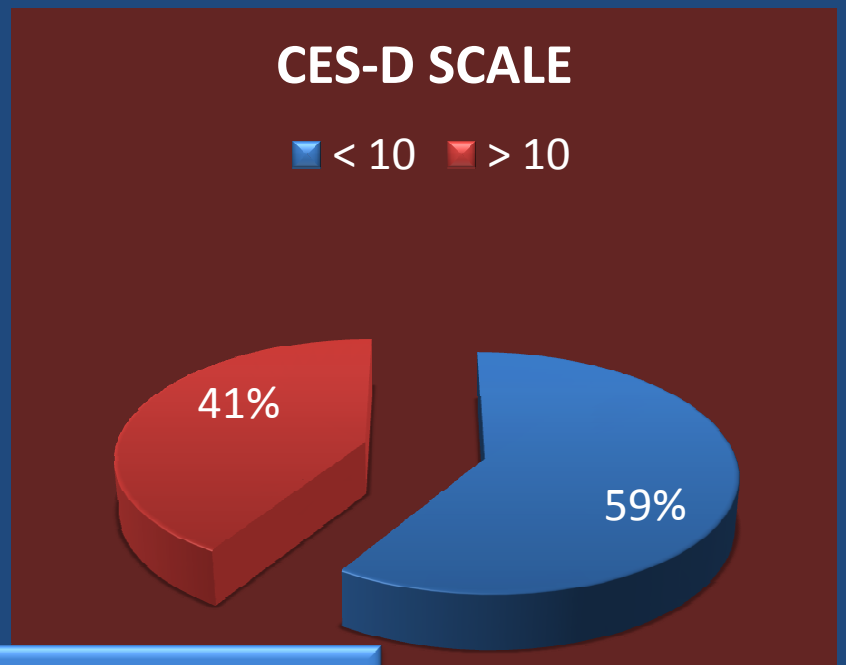
Healthy Lifestyle Institute C.U.R.I.A.MO. Università di Perugia

Depressive symptomatology

BEFORE



AFTER



C. Mazzeschi et al. Journal Clinical Endocrinology and Metabolism , Dec 2012 97: E2261-E2265

PSYCHOLOGICAL REPORTS
ISSN 0033-2941

AmSci

Psychological Reports: Mental & Physical Health
2013, 112, 1, 33-46.

EFFECTS OF A MULTIDISCIPLINARY LIFESTYLE INTERVENTION FOR OBESITY ON MENTAL AND PHYSICAL COMPONENTS OF QUALITY OF LIFE: THE MEDIATORY ROLE OF DEPRESSION[1, 2, 3]

CHIARA PAZZAGLI, CLAUDIA MAZZESCHI, AND LOREDANA LAGHEZZA

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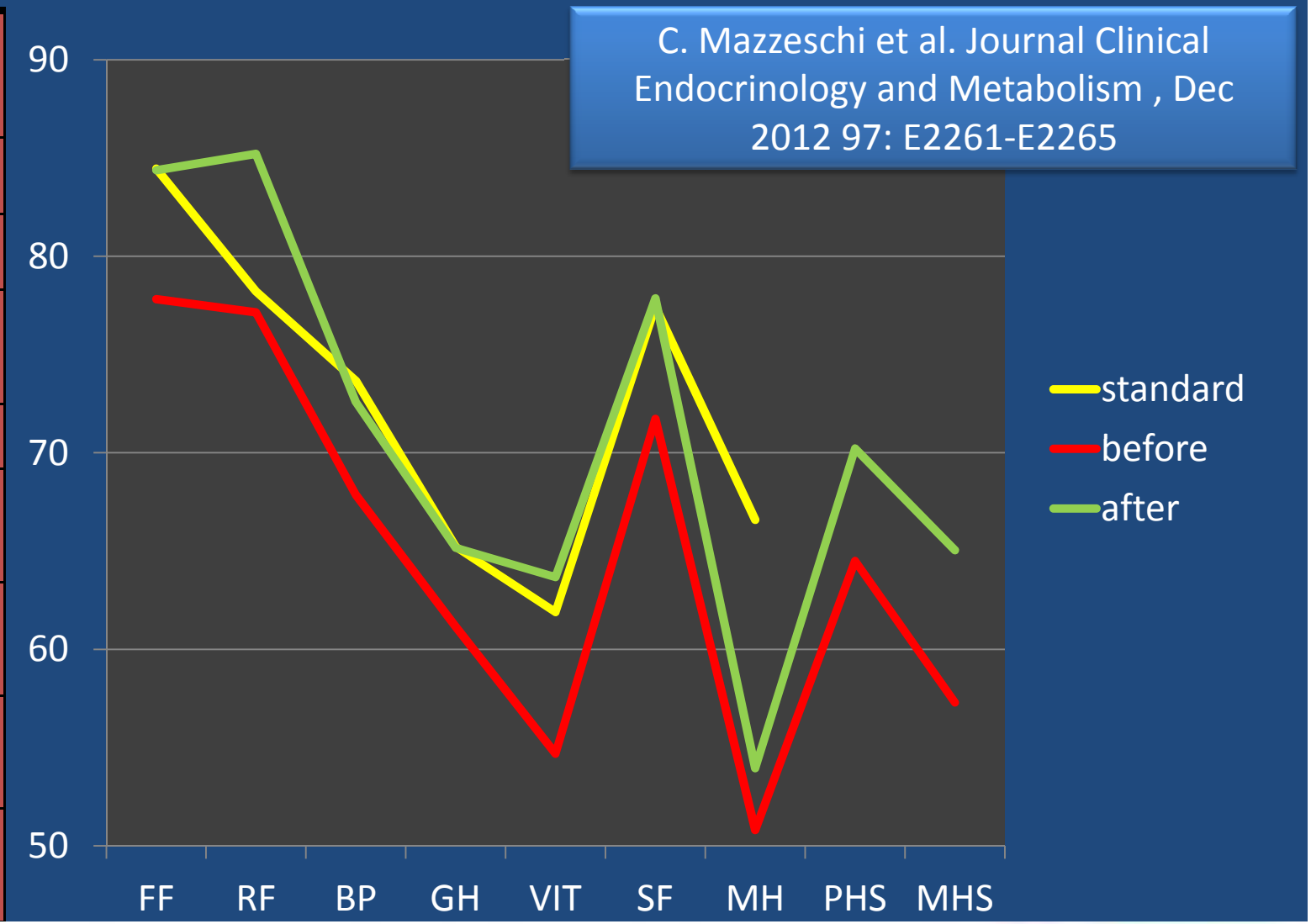
Perceived quality of life (SF-36)

Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Mental health
Physical Health Summary
Mental Health Summary



C. Mazzeschi et al. Journal Clinical Endocrinology and Metabolism , Dec 2012 97: E2261-E2265

Il punto di vista dei pazienti

Nutrition, Metabolism & Cardiovascular Diseases (2013) **23**, 337–343

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Nutrition, Metabolism & Cardiovascular Diseases

Multidisciplinary lifestyle intervention in the obese: Its impact on patients' perception of the disease, food and physical exercise

N. Piana, D. Battistini, L. Urbani, G. Romani, C. Fatone, C. Pazzagli, L. Laghezza, C. Mazzeschi, P. De Feo*

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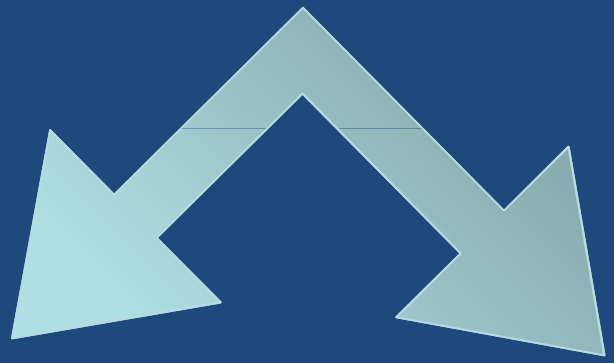
INVESTIRE NELL'ESERCIZIO TERAPIA PUO' ESSERE ECONOMICAMENTE VANTAGGIOSO?



TRIALS CLINICI
RANDOMIZZATI

PROPENSITY
SCORE MATCHING

selection on observables

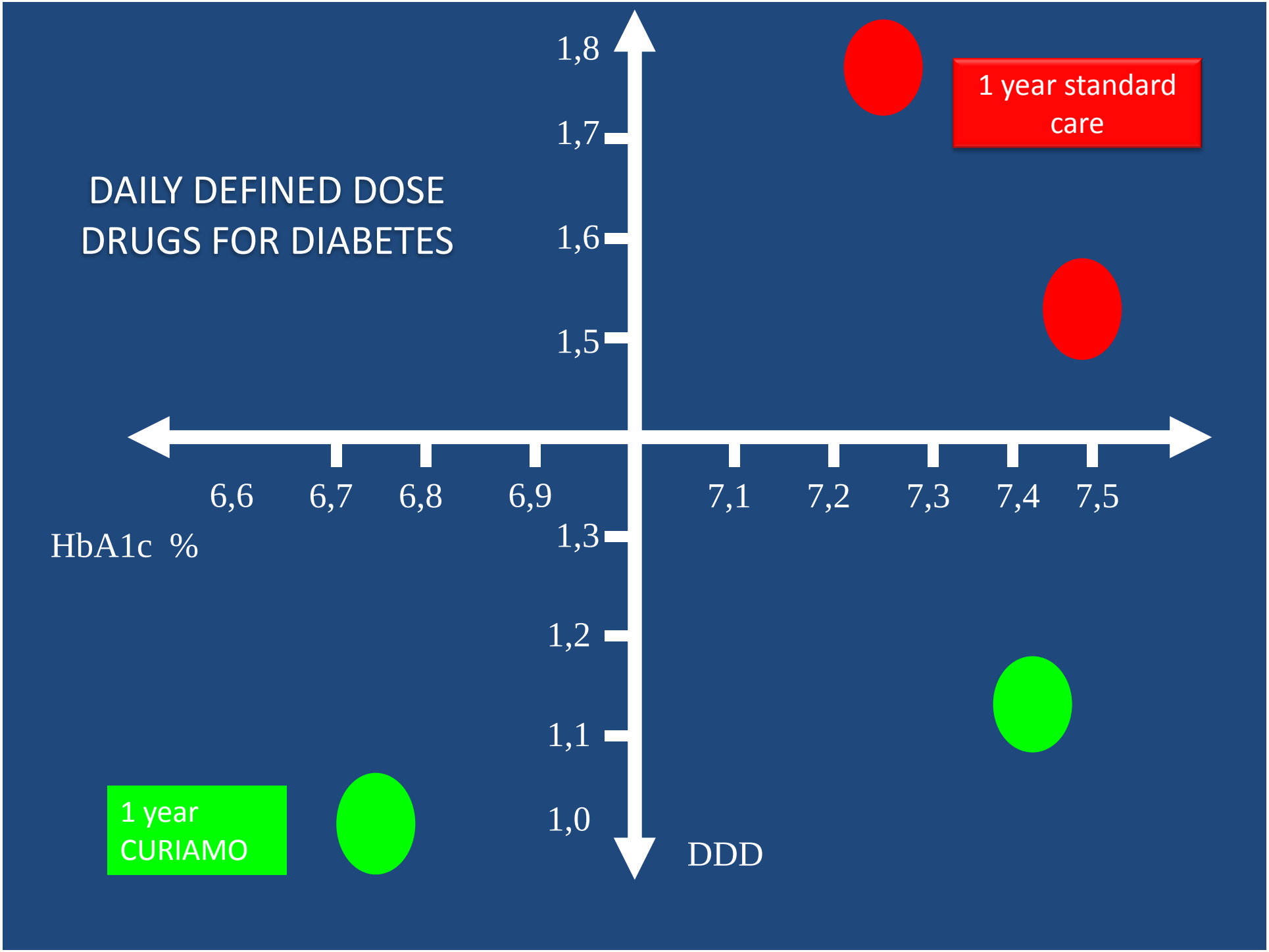
Direct costs in diabetic and non diabetic people: The population-based Turin study, Italy

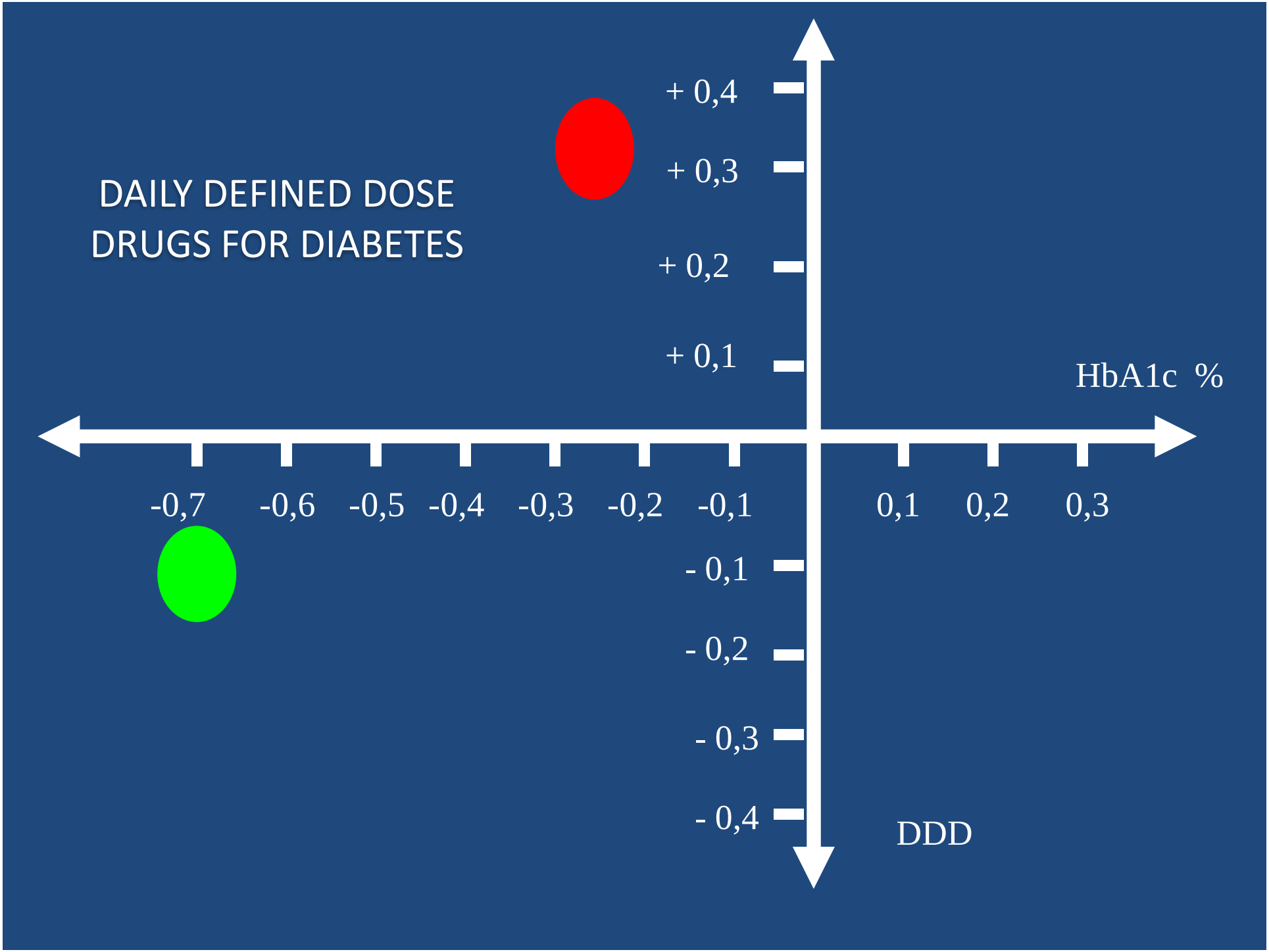
G. Bruno [a,*], R. Picariello [b], A. Petrelli [b], F. Panero [a], G. Costa [c], P. Cavallo-Perin [a], M. Demaria [d], R. Gnavi [b]

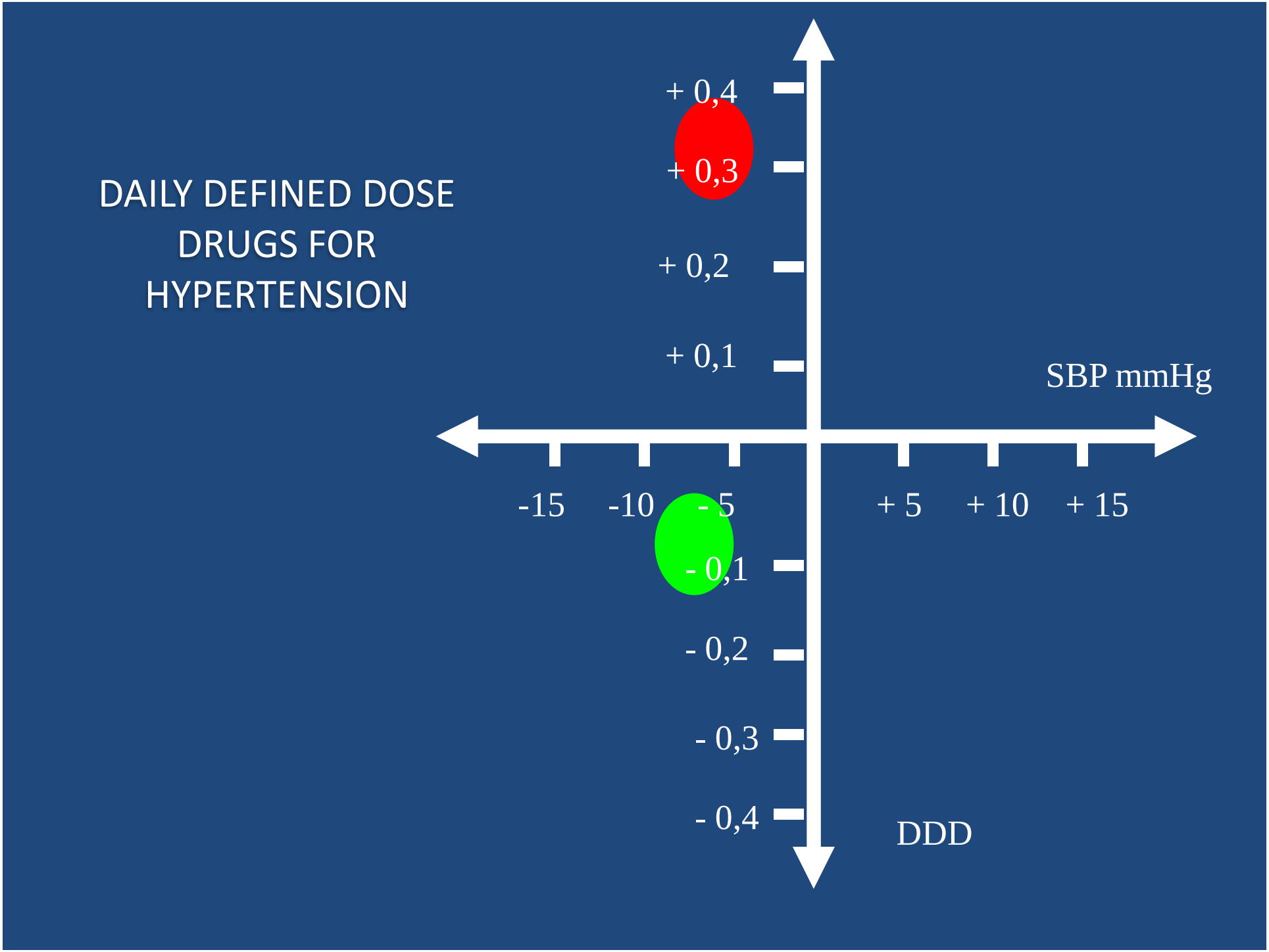
care. Apart from consumable goods, the largest differences in direct costs between persons with and without diabetes were due to hospitalizations (3.1 folds) and drugs (2.8 folds). These findings have implications for health care planners. As increasing prevalence of the disease in developed countries is mainly due to the increasing ageing of the general population and the improved survival of diabetic people [22], diabetes-related health care costs are likely to increase progressively in next years, having a profound impact on National Health System expenditure. This expected trend needs to be recognized by health care planners in order to adequately allocate resources to manage the burden of the disease.

PROPENSITY SCORE MATCHING

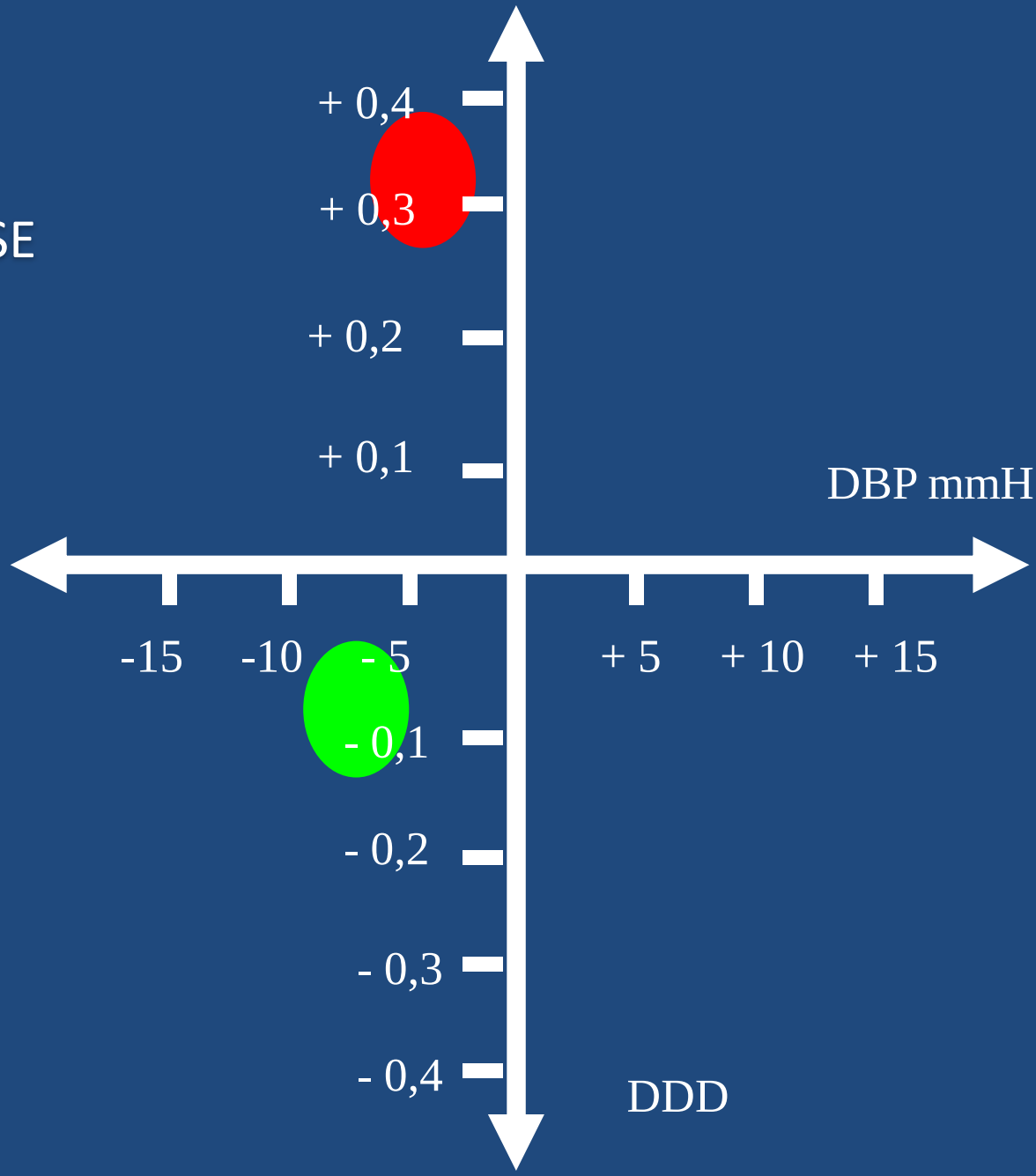
Caratteristiche al tempo 0	Pazienti CURIAMO (n° 150)	Pazienti ASL (n° 150)	p
Sesso	72 F 67 M	72 F 67 M	p= NS
Età media (anni)	56,1±9,7	56,5±11,0	p= 0,771
BMI (kg/m^2)	32,7±5,5	32,3±5,3	p= 0,538
Peso (kg)	92,0±16,9	89,9±18,1	p= 0,295
Circonferenza vita (cm)	110,0±12,8	106,8±12,8	p= 0,035
Glicemia basale (mg/dl)	147,8±40,9	151,1±38,4	p= 0,480
Emoglobina glicosilata HbA_{1c} (%)	7,4±1,3	7,5±1,2	p= 0,488
Pressione Arteriosa (mmHg)	PAS 139,3±15,6 PAD 81,7±8,7	PAS 137,1±13,6 PAD 80,0±7,2	p= 0,183 p= 0,068
Colesterolo totale (mg/dl)	193,8±35,7	197,3±33,5	p= 0,536
Colesterolo HDL (mg/dl)	48,5±11,3	49,0±12,2	p= 0,758
Trigliceridi (mg/dl)	160,5±89,6	165,4±76,6	p= 0,714


DAILY DEFINED DOSE
DRUGS FOR DIABETES
1,8
1,7
1,6
1,5
1,3
1,2
1,1
1,0
DDD
6,6
6,7
6,8
6,9
7,1
7,2
7,3
7,4
7,5
HbA1c %
1 year standard care
1 year CURIAMO

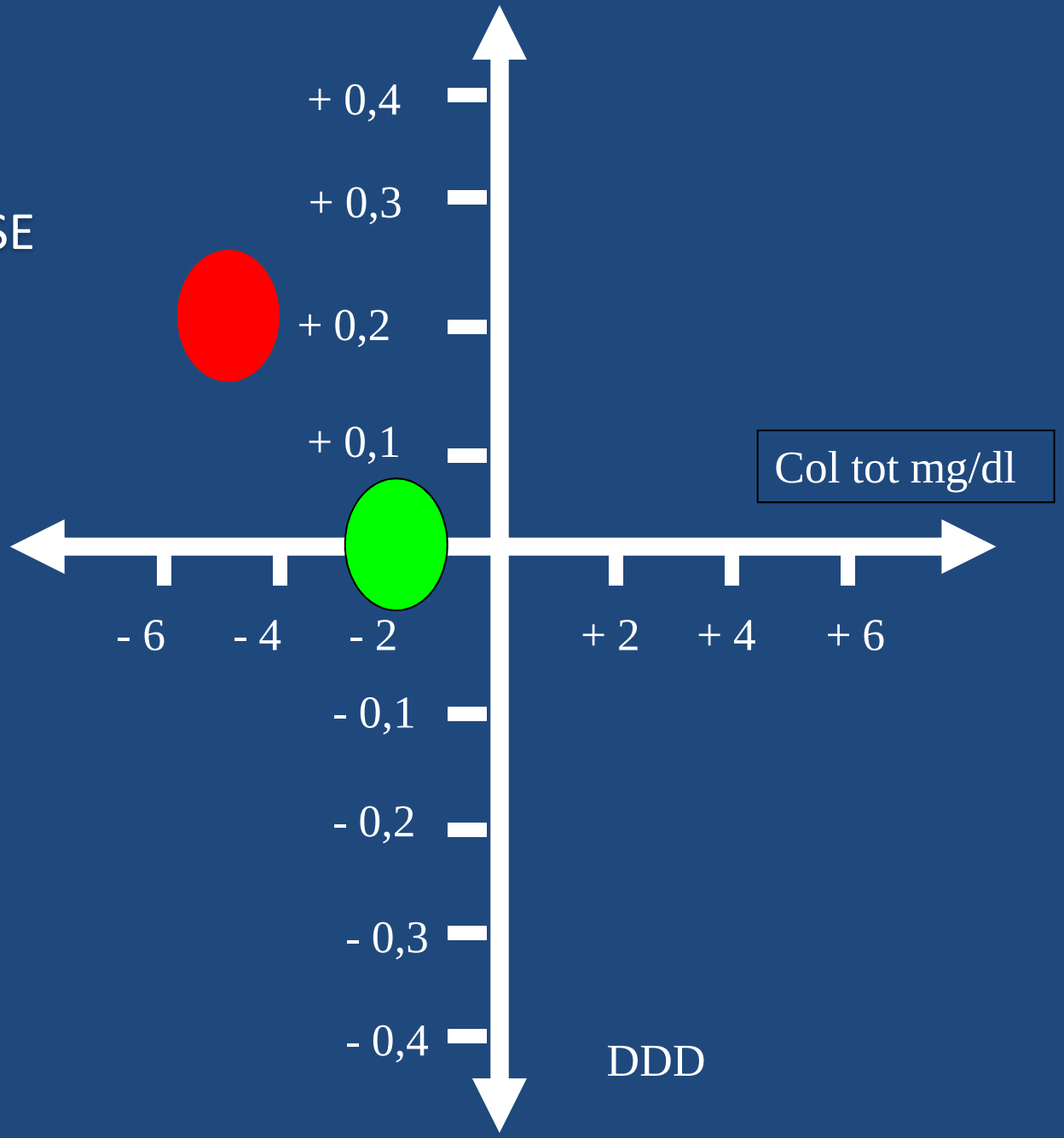

DAILY DEFINED DOSE
DRUGS FOR DIABETES
+ 0,4
+ 0,3
+ 0,2
+ 0,1
HbA1c %
-0,7
-0,6
-0,5
-0,4
-0,3
-0,2
-0,1
0,1
0,2
0,3
- 0,1
- 0,2
- 0,3
- 0,4
DDD


DAILY DEFINED DOSE
DRUGS FOR
HYPERTENSION
+ 0,4
+ 0,3
+ 0,2
+ 0,1
SBP mmHg
-15
-10
- 5
+ 5
+ 10
+ 15
- 0,1
- 0,2
- 0,3
- 0,4
DDD

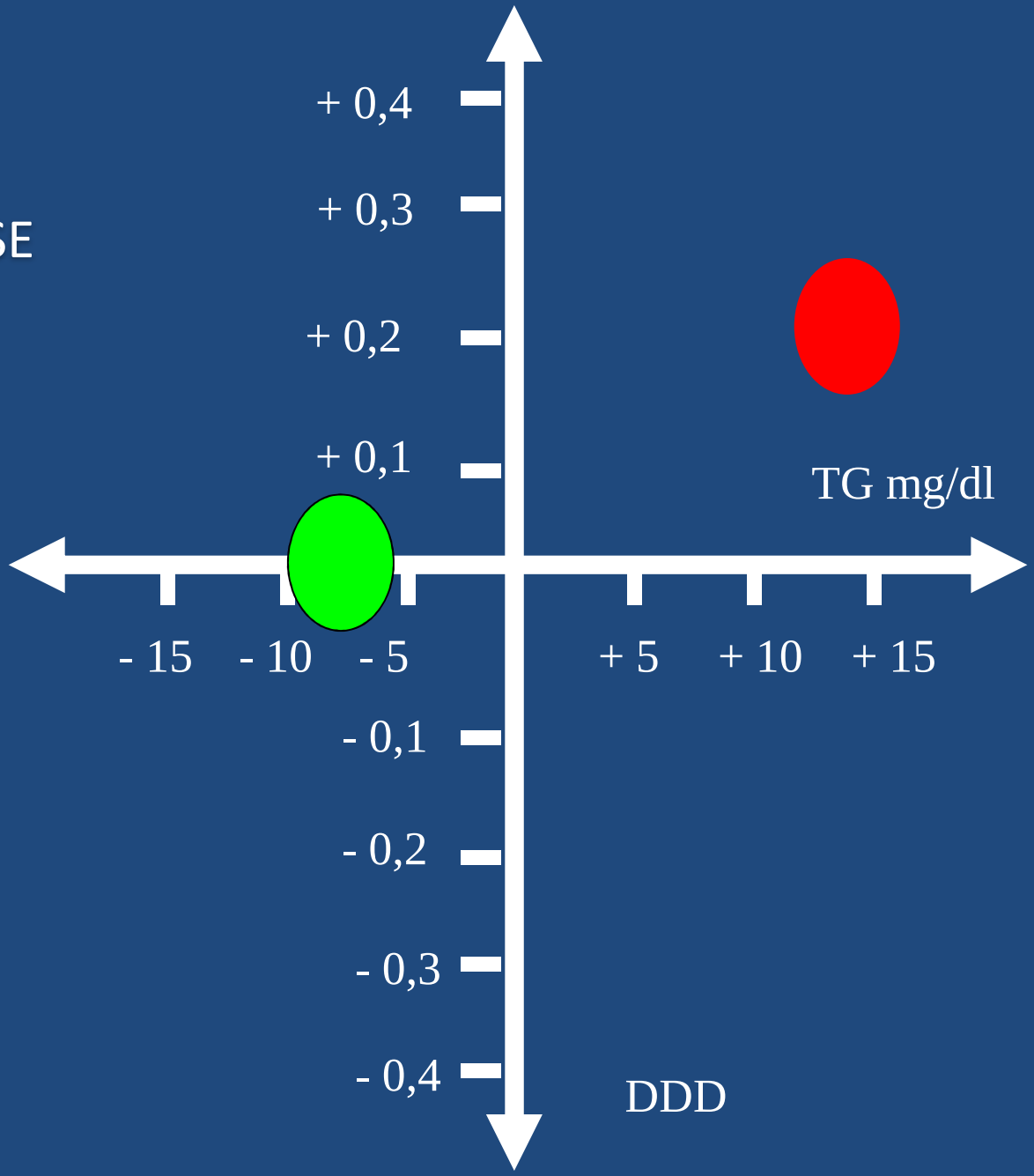
DAILY DEFINED DOSE
DRUGS FOR
HYPERTENSION



DAILY DEFINED DOSE
DRUGS FOR
DYSLIPIDEMIA

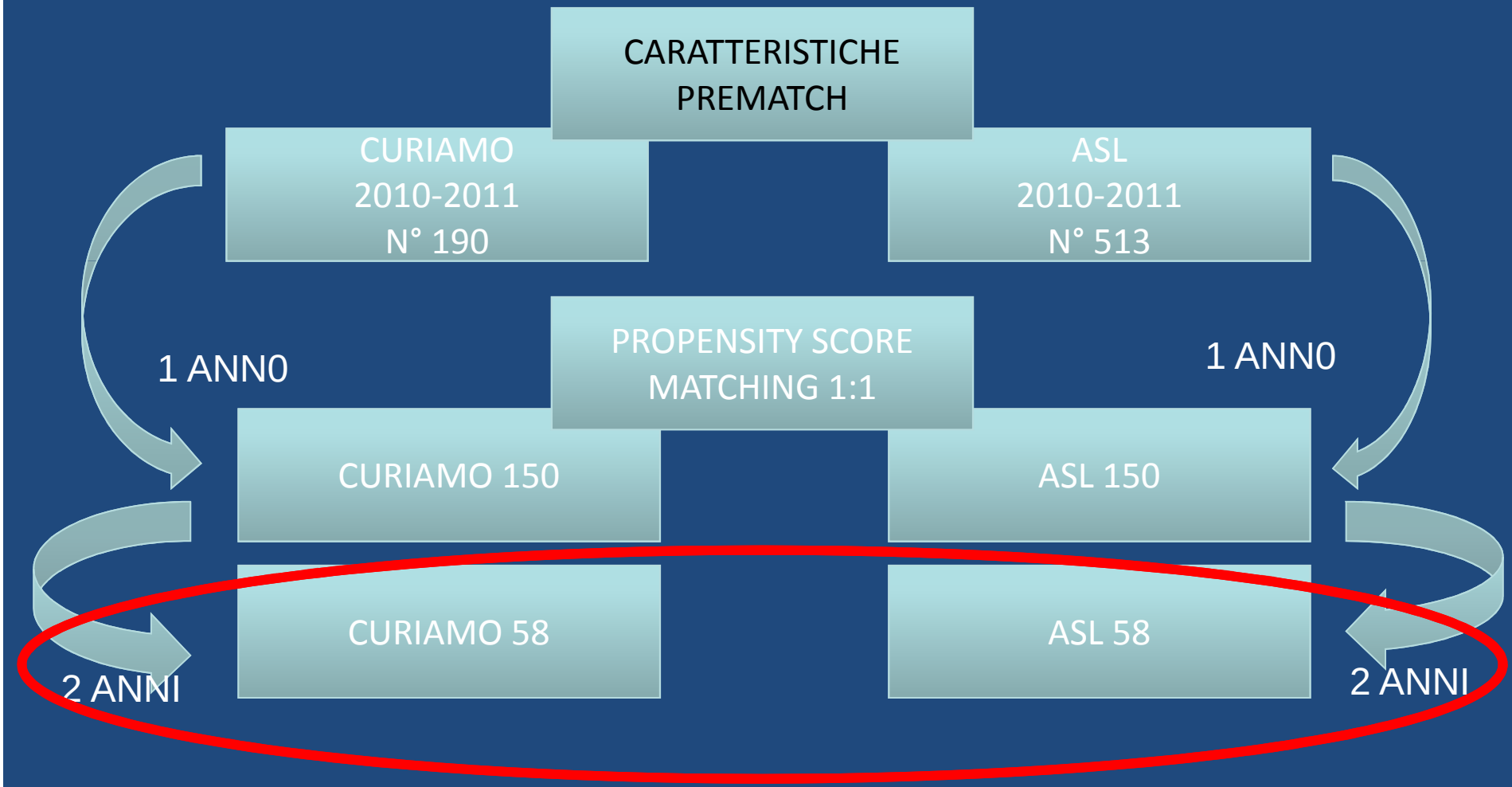


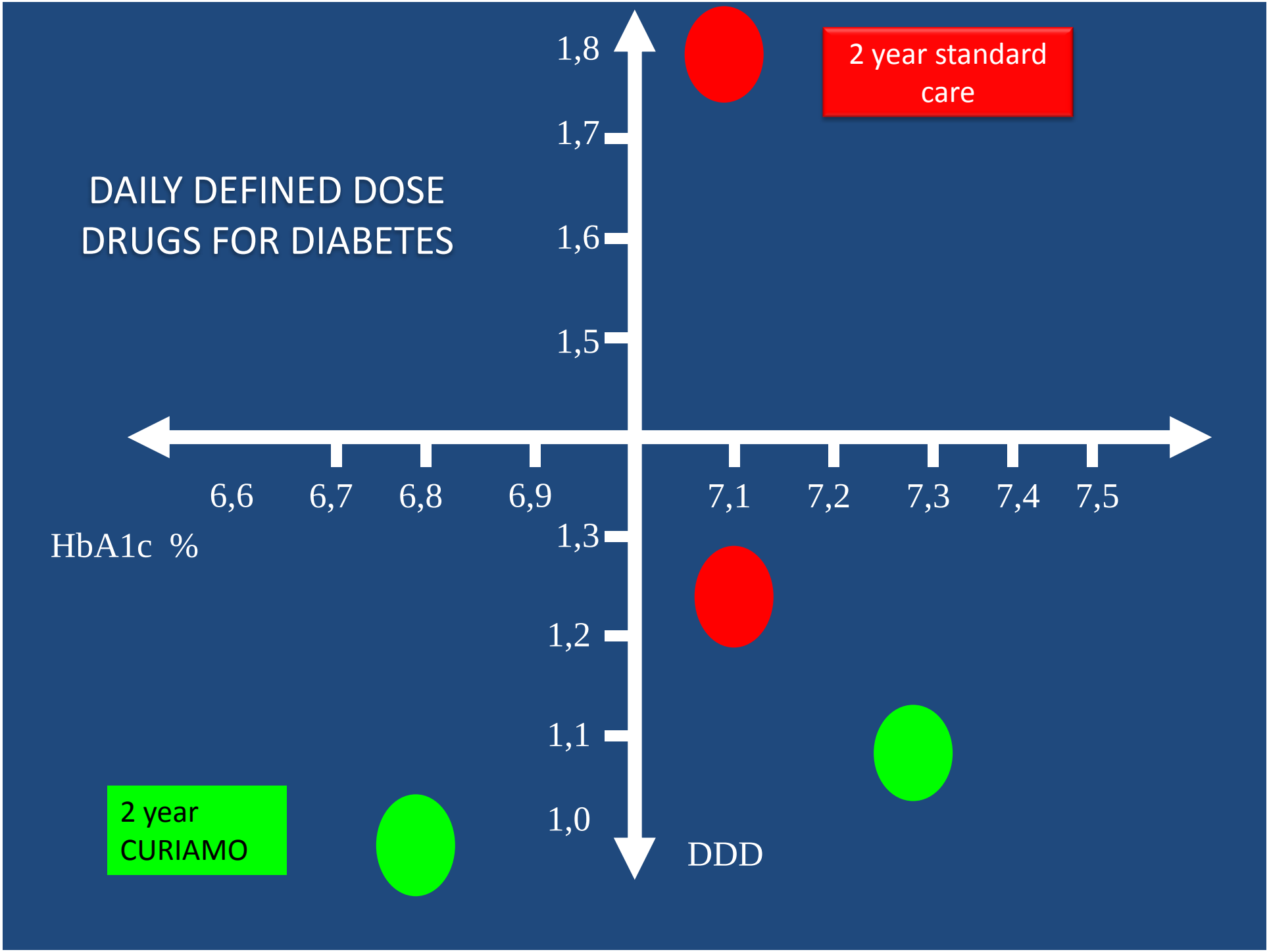
DAILY DEFINED DOSE
DRUGS FOR
DYSLIPIDEMIA



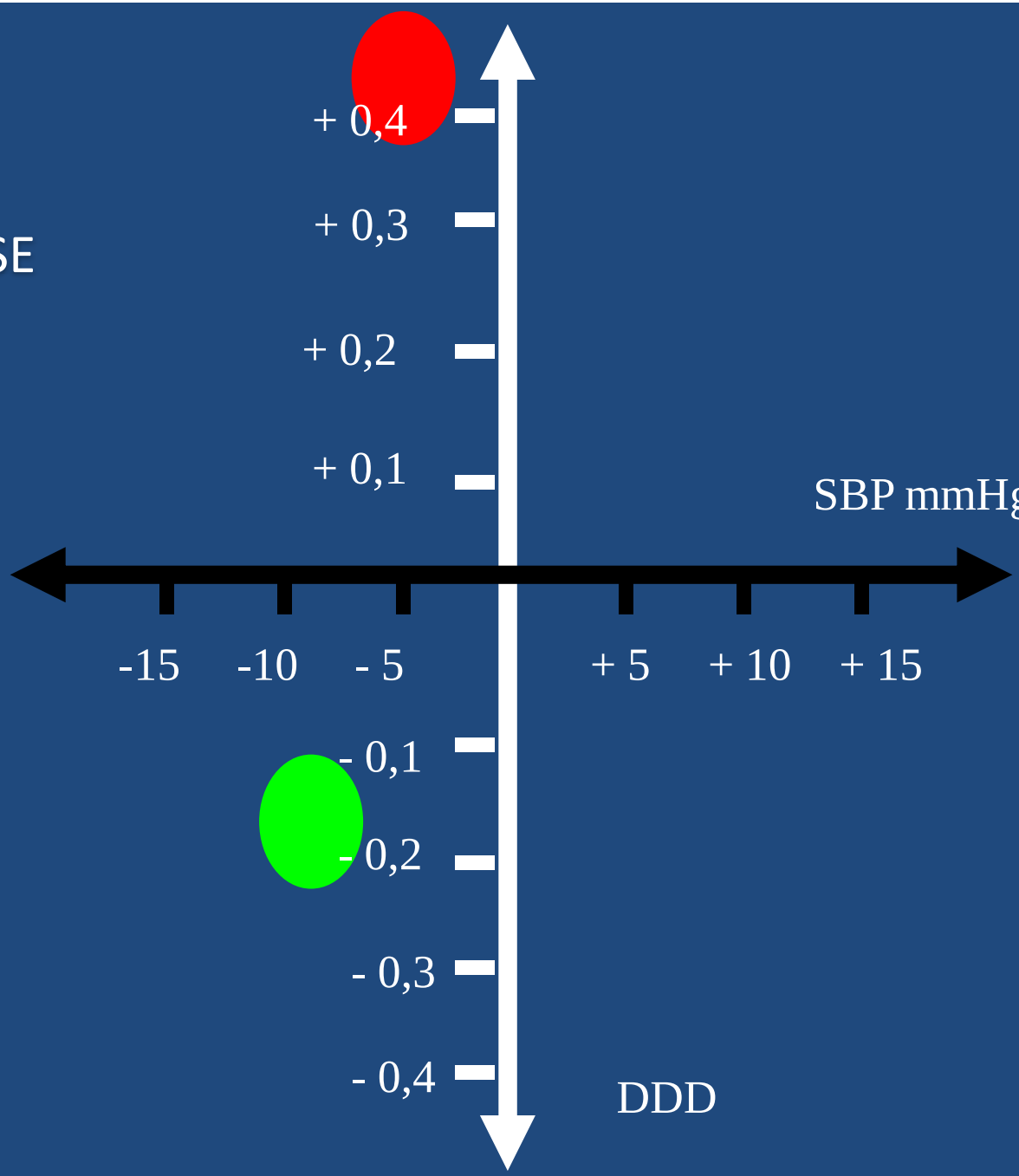
Caratteristiche	PAZIENTI CURIAMO (n° 150)		Δ%	p
	BASELINE	12 MESI		
DDD DIABETE	1,16±0,9	1,08±0,9	- 6,8	p< 0,05
Emoglobina glicosilata HbA_{1c} (%)	7,4±1,3	6,7±0,9	- 0,7%	p< 0,001
DDD IPERTENSIONE	1,87±1,9	1,73±1,7	- 7,4%	p< 0,05
Pressione Arteriosa (mmHg)	PAS 139,3±15,6 PAD 81,7±8,7	PAS 131,8±12,1 PAD 77,0±6,8	PAS – 5,3% PAD - 5,7%	p< 0,001 p< 0,001
DDD DISLIPIDEMIA	0,5±0,8	0,5±0,8	-	p= NS
Colesterolo tot (mg/dl)	193,8±35,7	191,7±35,2	- 1,0	p= NS
Trigliceridi (mg/dl)	160,5±89,6	152,3±71,3	- 5,1	p= NS

PROPENSITY SCORE MATCHING

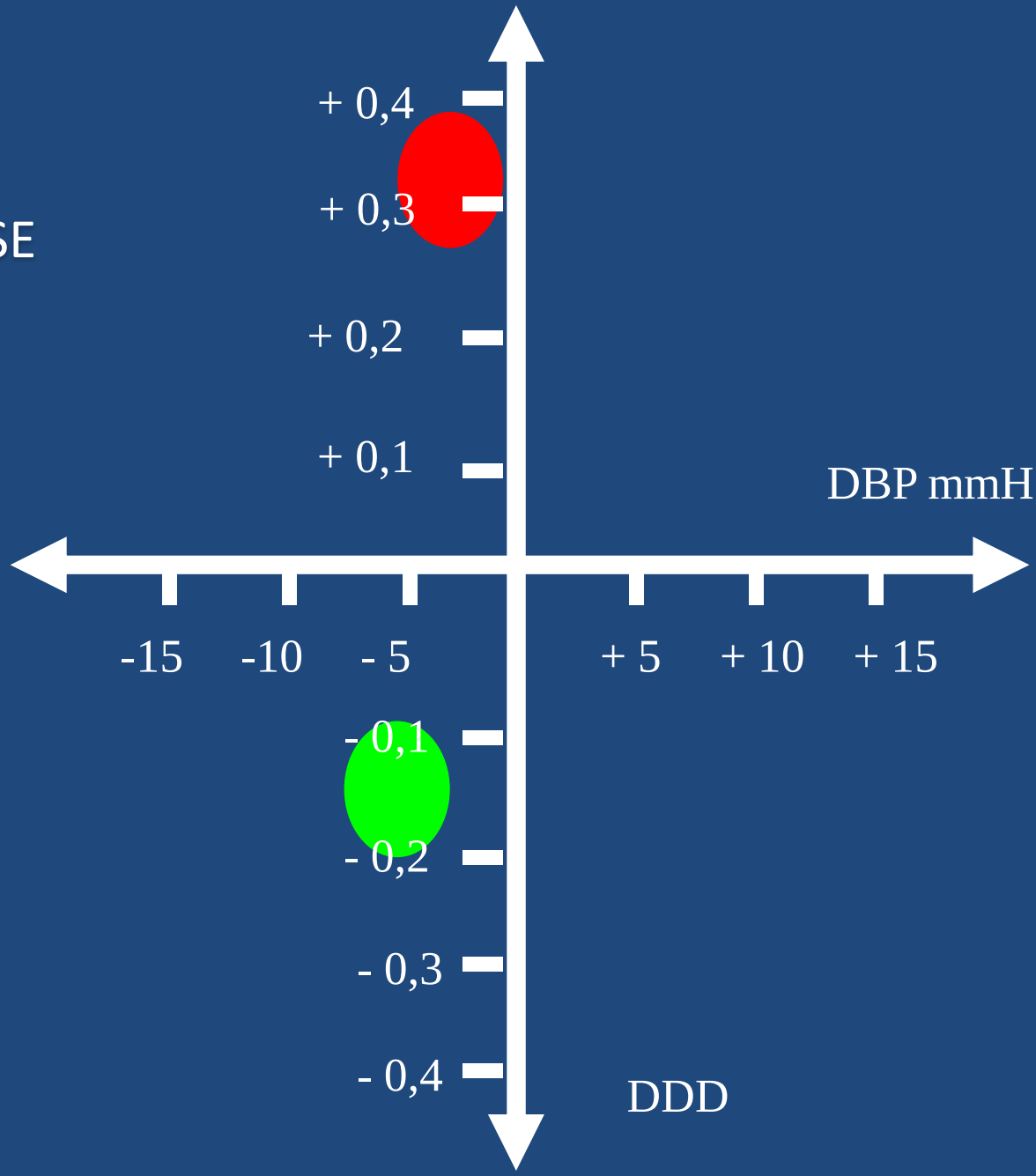



DAILY DEFINED DOSE
DRUGS FOR DIABETES
2 year standard care
2 year CURIAMO
1,8
1,7
1,6
1,5
1,3
1,2
1,1
1,0
6,6
6,7
6,8
6,9
7,1
7,2
7,3
7,4
7,5
HbA1c %
DDD

DAILY DEFINED DOSE
DRUGS FOR
HYPERTENSION



DAILY DEFINED DOSE
DRUGS FOR
HYPERTENSION



Caratteristiche	PAZIENTI CURIAMO (n° 58)		Δ%	p
	BASELINE	24 MESI		
DDD DIABETE	1,07±0,9	0,90±0,9	- 15,8	p< 0,001
Emoglobina glicosilata HbA_{1c} (%)	7,30±1,1	6,81±0,9	- 0,5%	p< 0,001
DDD IPERTENSIONE	1,65±1,5	1,42±0,9	- 21,35%	p< 0,001
Pressione Arteriosa (mmHg)	PAS 143,4±16,0 PAD 82,1±8,7	PAS 134,3±11,4 PAD 78,0±6,7	PAS – 6,3% PAD – 4,9%	p< 0,001 p< 0,001

CONCLUSIONE

IL MODELLO DI CURA MULTIDISCIPLINARE CENTRATO SULL'ESERCIZIO TERAPIA NEL DIABETE MELLITO DI TIPO 2 SI DIMOSTRA ECONOMICAMENTE SOSTENIBILE E DOMINANTE

Le Dottoresse Maritta Pöyhönen-Alho e Niina Sahrakorpi del Department of Obstetrics and Gynecology, Helsinki University Central Hospital hanno visitato il CURIAMO dal 15 al 19 Aprile per approfondire il modello multidisciplinare di intervento per migliorare lo stile di vita di persone con obesità e diabete.

Grazie per l’attenzione!