

Personalized Health: advanced prevention between wellness and sport

Prof. Vincenzo ROMANO SPICA

Multi-factorial model

**RISK/PROTECTIVE
FACTORS**

GENETICS

**ENVIRONMENT
LIFE STYLES**



DISEASE

Multi-HEALTH/factor model

PROTECTIVE FACTORS

GENETICS

ENVIRONMENT
LIFE STYLES



HEALTH

ATHLETIC
PERFORMANCE
WELLNESS

Black BOX



GENETICS

**ENVIRONMENT
LIFE STYLES**



ATHLETIC
PERFORMANCE
WELLNESS

**Molecular
Methods**

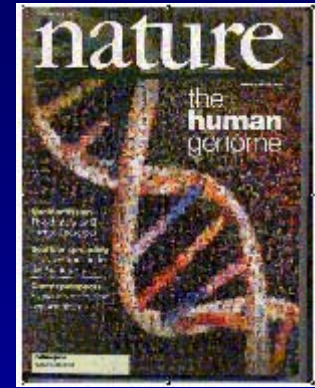
**Acquiring
Data**

**Integrated
Bioinformatics
Tools**

**Safe Management
of Genetic Data**



In February 2001, two papers provided the first detailed look at the nearly complete sequence of the human genome.



Human Genome Project

Prevention

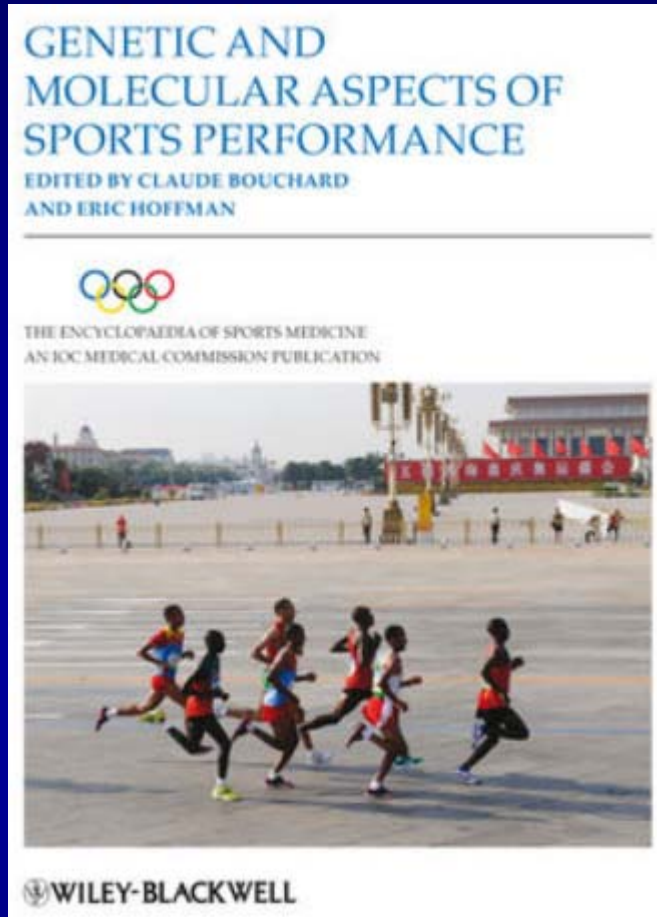


Wellness



Health Promotion





Jan 2011, an IOC medical commission publication

the contribution of specific genes and molecular markers as related to endurance, strength and power, and responsiveness to specific conditioning programs.

Chapter13: genes and endurance performance

Chapter14: genes and strength and power phenotypes

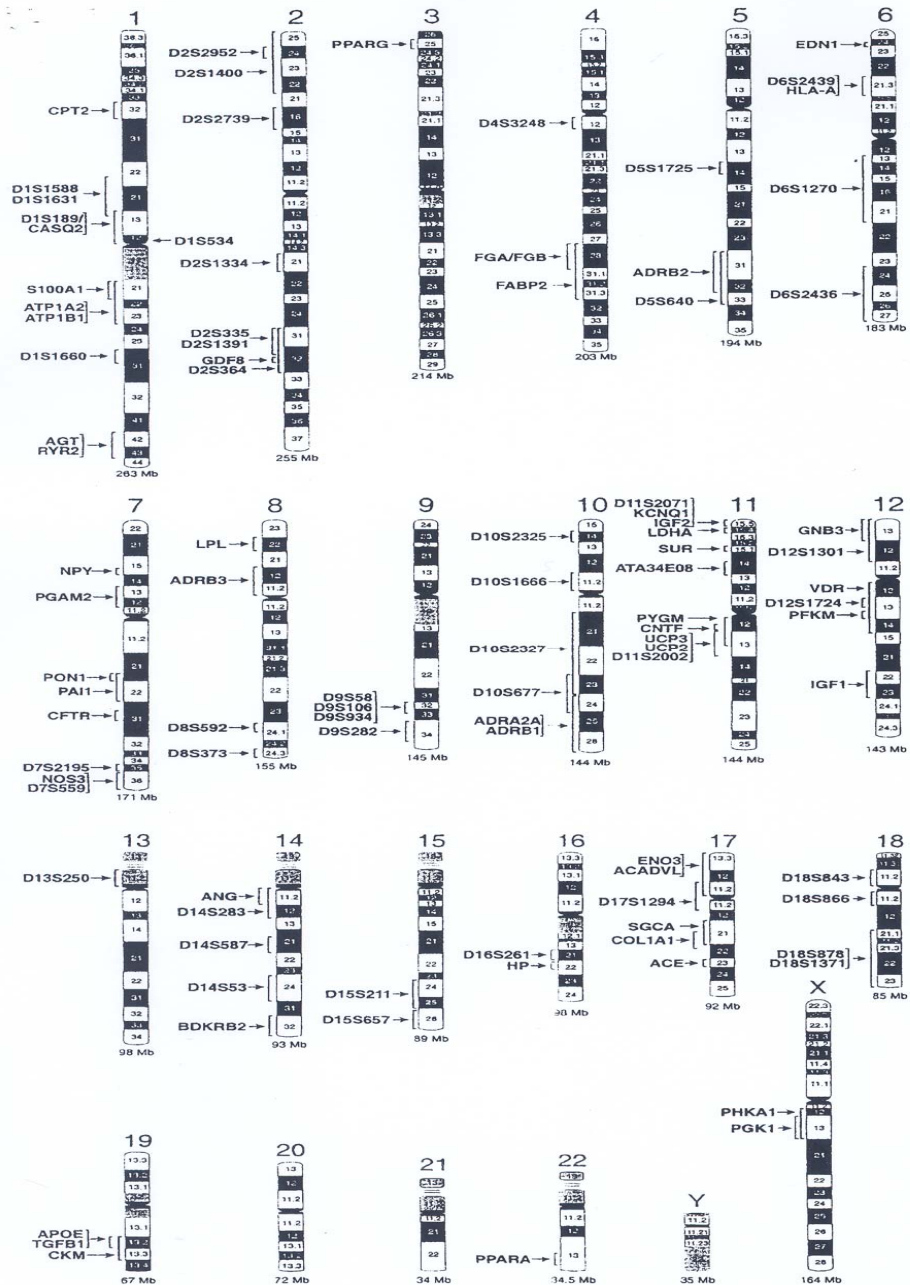
Chapter15: genes and response to training

Chapter17: the ACE gene and performance

Chapter18: the ACTN3 gene and human performance

Chapter19: mitochondrial DNA sequence variation and performance

Chapter 20-21-22: genes, exercise and metabolism and cardiovascular phenotypes



Integrated approach

NBT dedicated volume on Personalised Medicine 2012

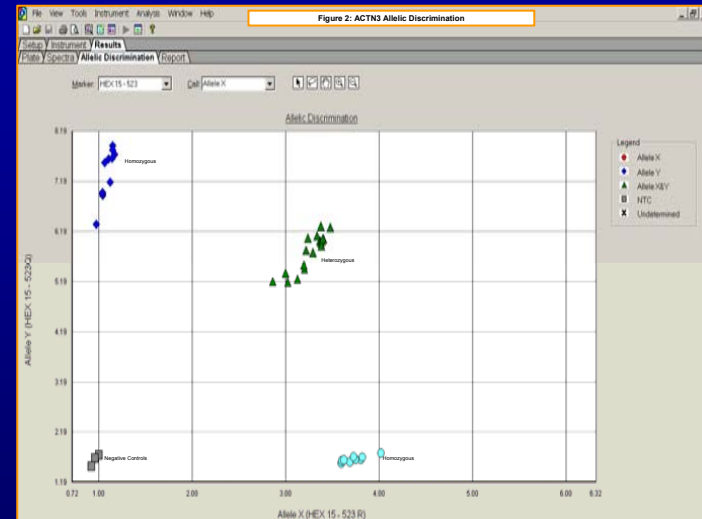
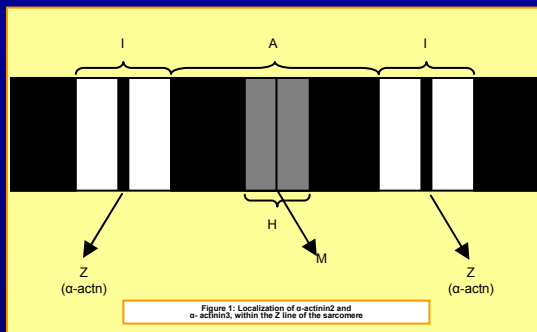


Our DB

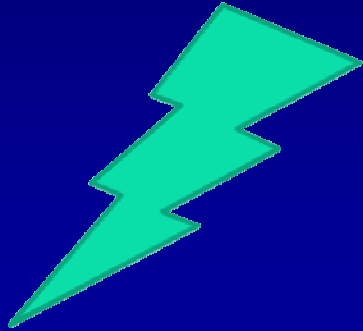
- **Musculo-skeletal HEALTH**

- ✓ Sequences, data, SNPs (Cfr. diapo and video)

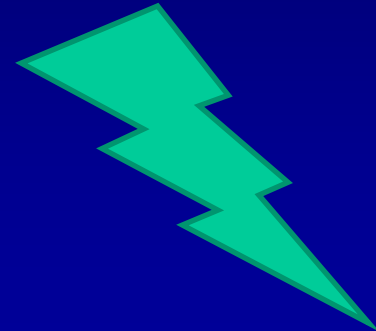
- ✓ Software and output (Cfr. diapo and video)



Preventive Adapted Physical Activity



Contrasting riskfactors
related to sedentary life
style



Acting positively
as an health
promoting factor

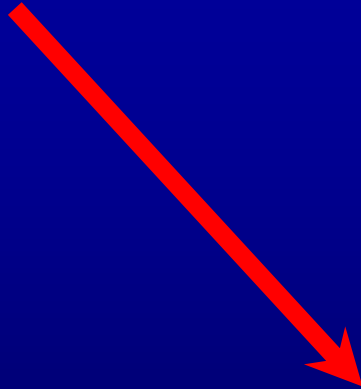
SEDENTARY



ABSENCE OF MOVEMENT



Risk factor



APA



Muscular movement
involving an energy consumption



Protective Factor



(+) incidence/mortality (-)
1.9 milions death, world



World Health Day

2002



2012

World Health Day 2012 -7 April

"L'attività fisica dovrebbe essere alla base delle abitudini di tutti e perfettamente integrata nella routine quotidiana.

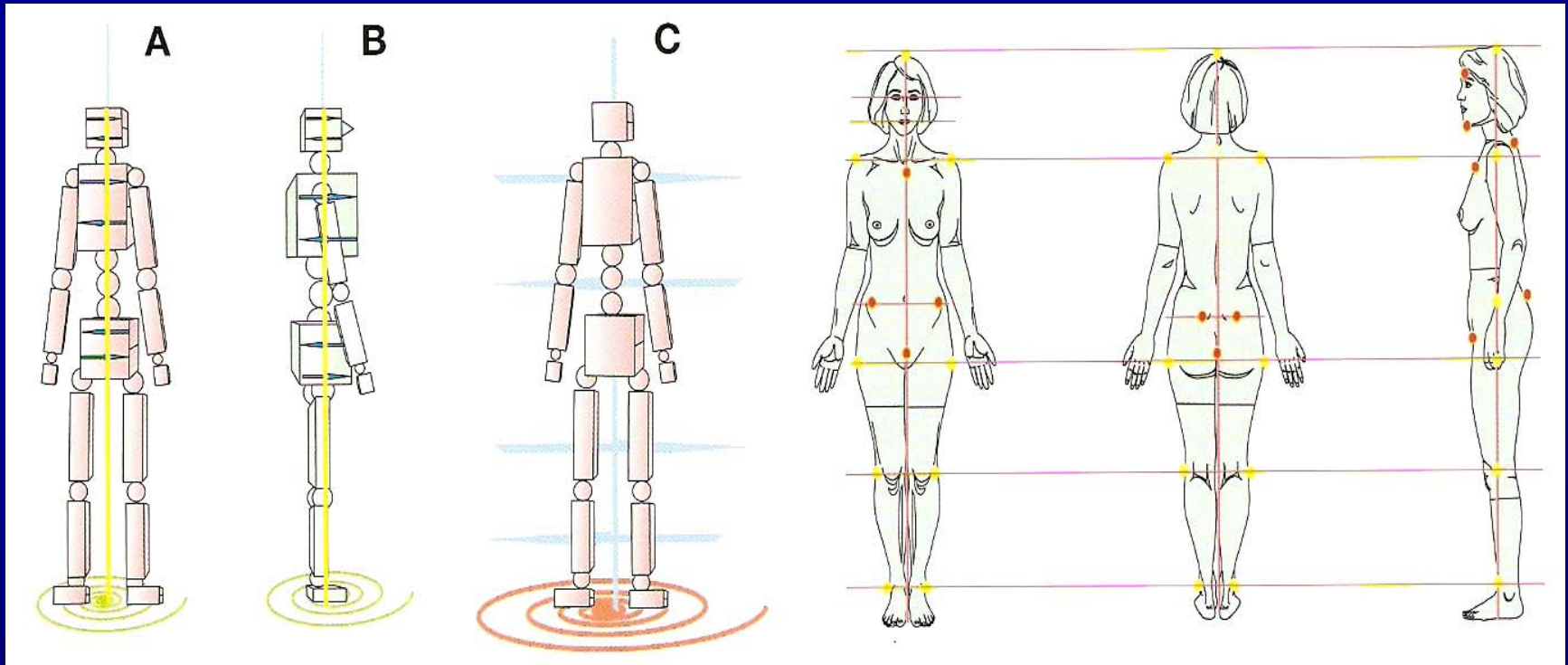
"Roberto Bertollini, direttore tecnico dell'OMS Europa Roma, 2002.

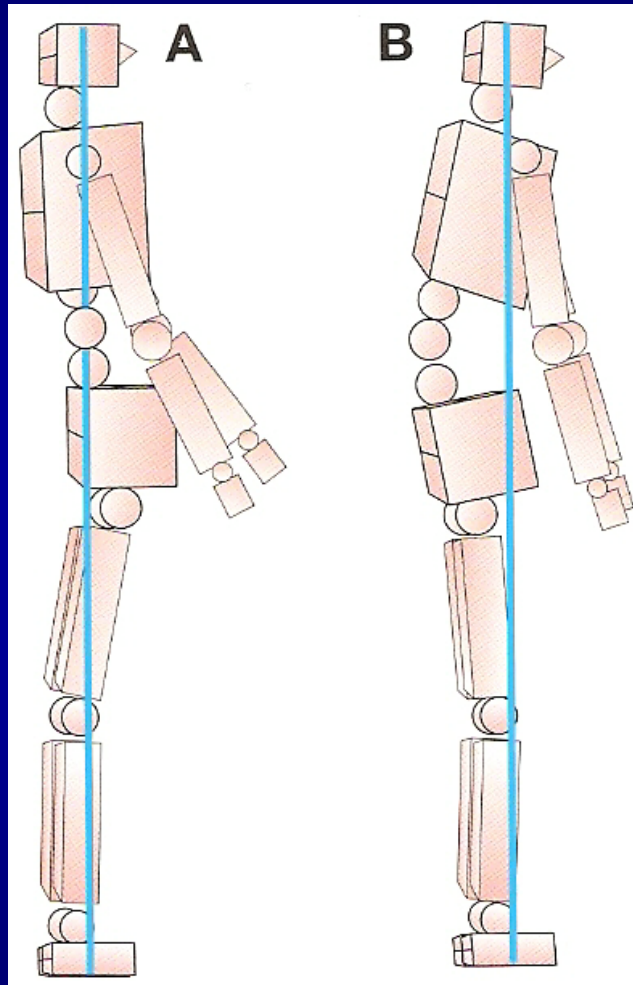
National, European Programs ...

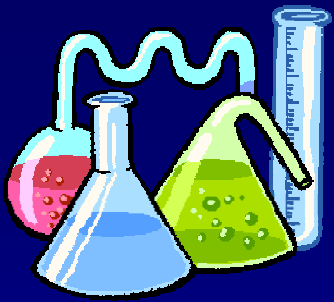
EQUILIBRIUM

Axes and Symmetry

AESTHETICS

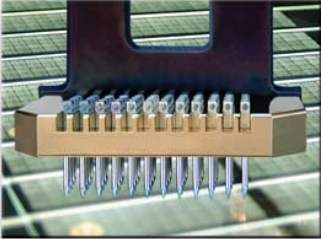




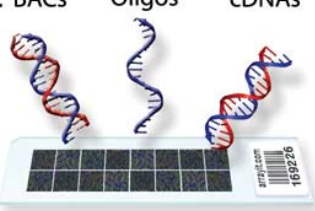


Physical Activity
Diet
Life Styles


1. Manufacture CGH microarrays




2. BACs Oligos cDNAs



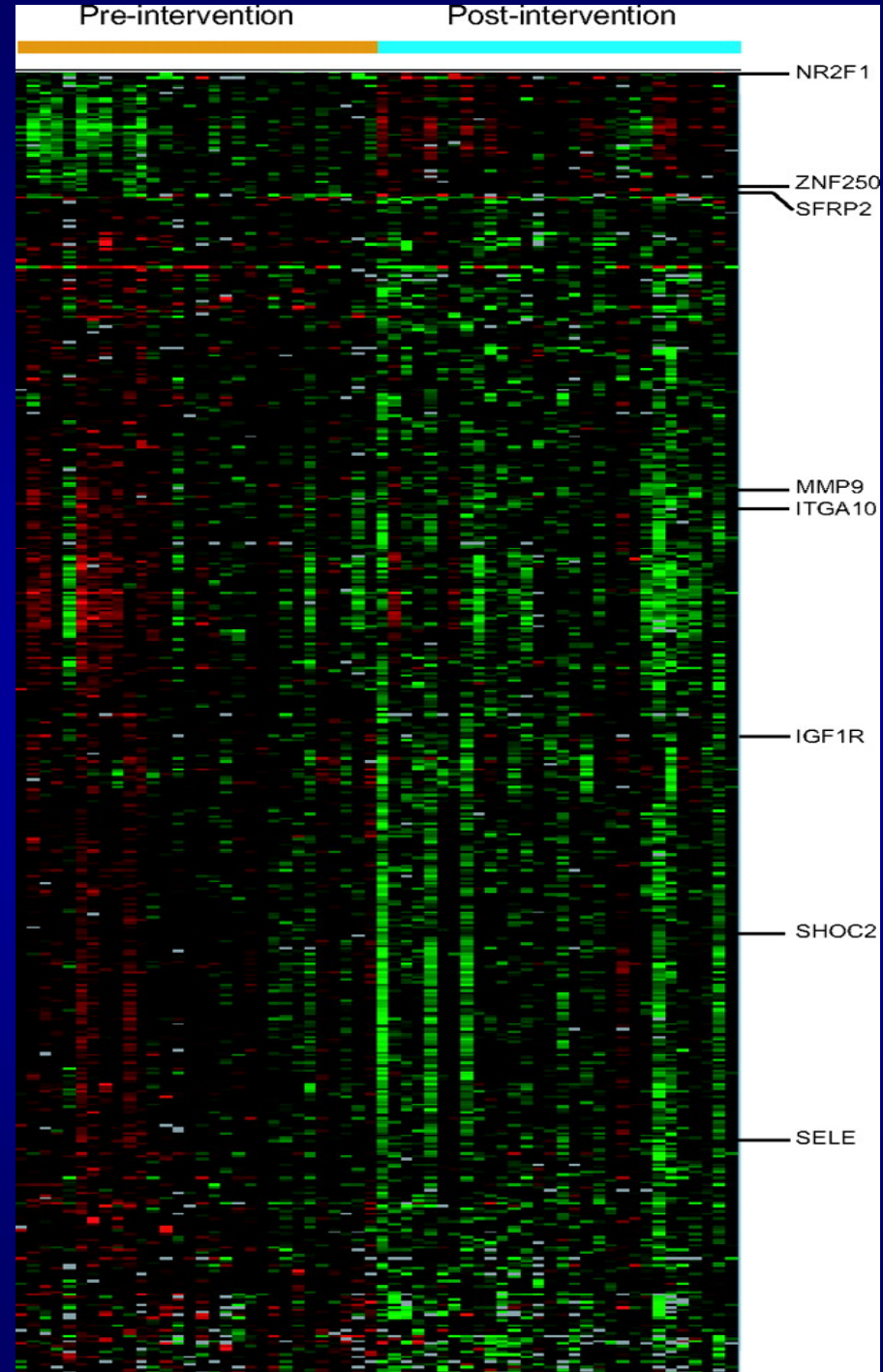
3. Hybridize genomic DNA
two (2) color



4. Scan and analyze



Advanced Molecular Biology...



But, ... Most Sophisticated, Most predictive, Most effective ...
Biomarker



Rischio relativo di morte riferito alla WC in soggetti europei. Pischon et al., 2008.

Rischio relativo (uomini)

| WC (cm) | <86,0 | 86,0/<91,5 | 91,5/<96,5 | 96,5/<102,7 | ≥102,7 | P |
|------------------------------|-------|------------------|------------------|------------------|-------------------|--------|
| rischio normalizzato per BMI | 1 | 1,15 (1,05-1,26) | 1,35 (1,22-1,50) | 1,63 (1,46-1,83) | 2,05 (1,80-2,339) | <0,001 |

Rischio relativo (donne)

| WC (cm) | <70,1 | 70,1/<75,6 | 75,6/<81,0 | 81,0/<89,0 | ≥89,0 | P |
|------------------------------|-------|------------------|------------------|------------------|------------------|--------|
| rischio normalizzato per BMI | 1 | 1,16 (1,05-1,28) | 1,21 (1,09-1,35) | 1,46 (1,30-1,64) | 1,78 (1,56-2,04) | <0,001 |



ENVIRONMENT

PHYSICAL ACTIVITY

LIFE STYLES

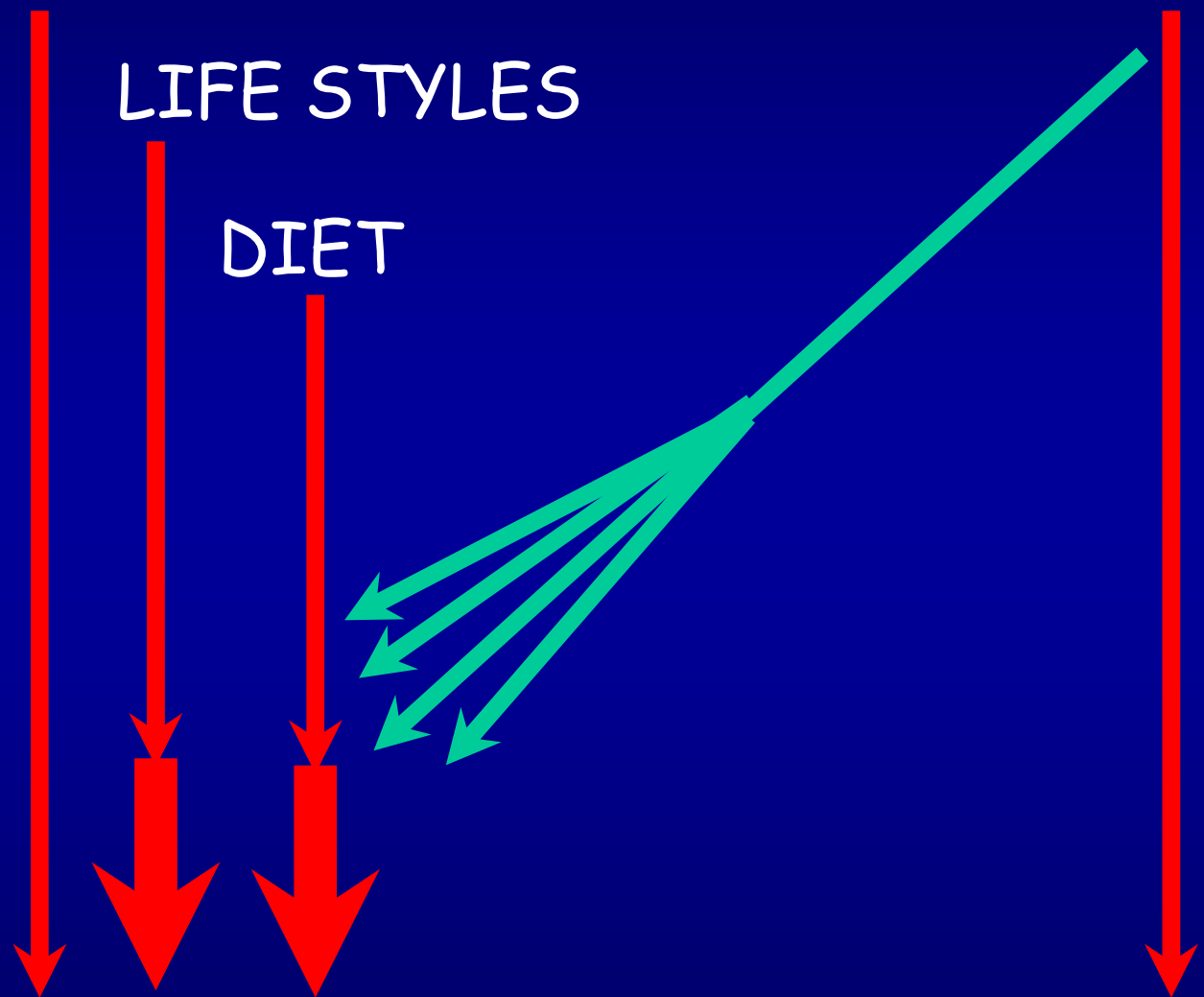
DIET

INDIVIDUALISED

GENETICS - FAMILIARITY

POSTURA
OTHER

WELLNESS



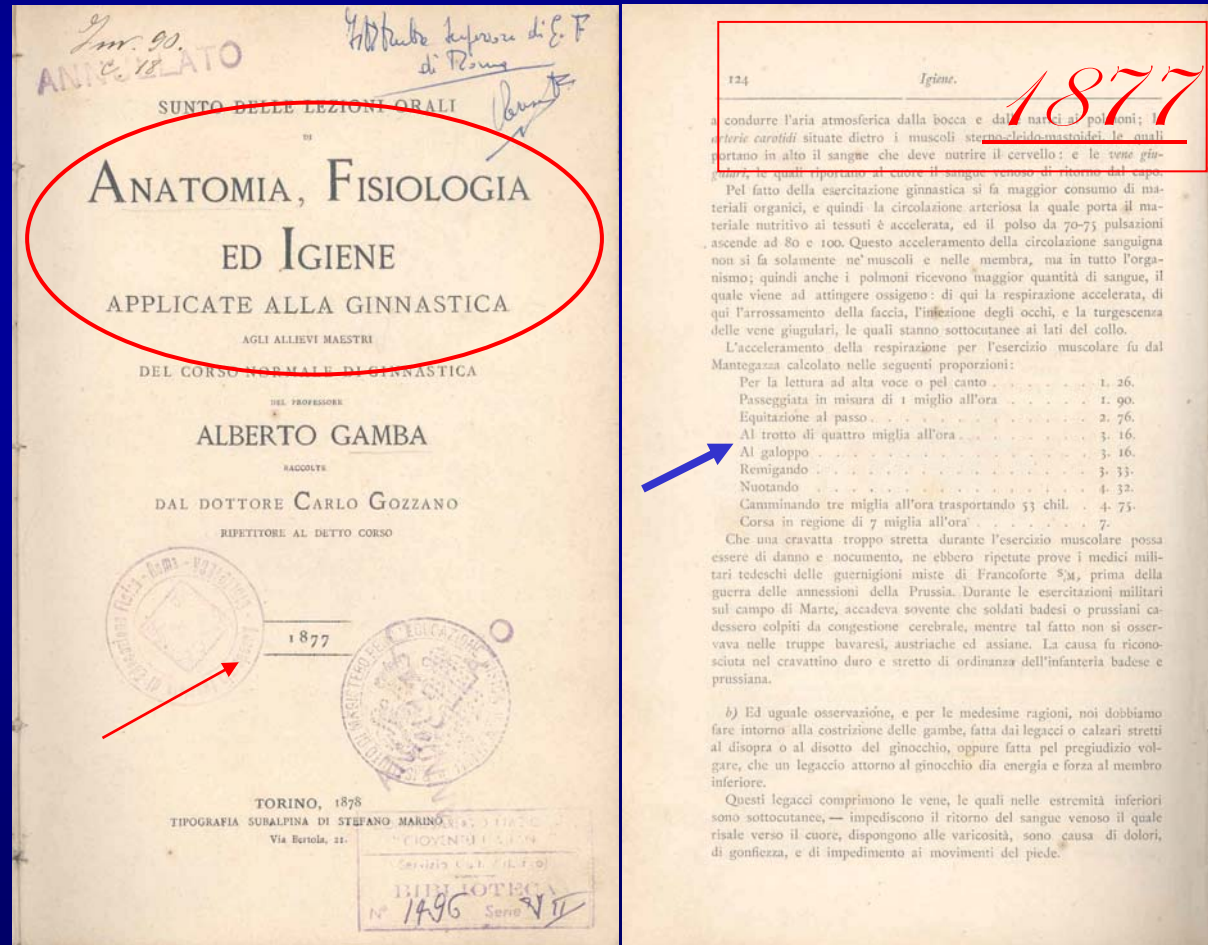
MUSCLE

- **Prevention (I, II, III)**
- **Exercise/Other (HBP, ..)**

INDIVIDUAL RESPONSE

Between High Tech and Tradition...

... Same questions new approaches



Wiki IGIENE

Ref.:
www.wikigiene.it

WikiIGIENE

Igiene, prevenzione, promozione della salute

Materiale didattico per i corsi di laurea in Scienze Motorie, su argomenti di Igiene generale ed applicata allo Sport e Attività Motorie



Corso di Laurea in Scienze Motorie e Sportive
(classe L-22)



Corso di Laurea Magistrale in Scienze e Tecniche delle Attività Motorie,
Preventive e Adattate
(classe LM-67)



Corso di Laurea Magistrale in Organizzazione e Gestione dei Servizi per lo
Sport e le Attività Motorie
(classe LM-47)



Corso di Laurea Magistrale in Scienze e Tecniche dello Sport
(classe LM-68)

Editoriale

Testi
autovalutazione
FACetiae

approfondimenti web

Organizzazione
Mondiale della
Sanità (OMS)

salute

approfondimenti

Paleoigiene

ricerca

Vai

Ricerca

G. Brandi, G. Liguori, V. Romano Spica

Igiene e Sanità Pubblica per Scienze Motorie

Vol. 1

Antonia

QUADERNI SANITARI PER SCIENZE MOTORIE
A cura di G. Brandi, G. Liguori, V. Romano Spica

Vol. 1

Wiki
IGIENE
Igiene
e Sanità Pubblica
per Scienze Motorie

Contiene password per approfondimenti
e quiz di autoapprendimento su www.Wikigiene.it

Antonio Dellino Editore
medicina scienze

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