Evaluation of the final stage preparation to the Athens Olympic Games in the World Leading Swimming National Teams

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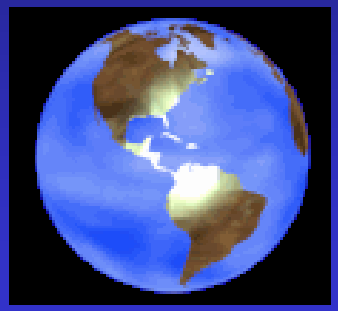
Plan

- Introduction
- Evidence of the Athens OG
- Factors affecting the peaking
- Why they didn’t succeed

Terminology

Peaking - obtaining the best athletic conditions at a particular moment



Two approaches to investigate the peaking

Evaluation of performance gains during the taper

Evaluation of performance gains during the final stage preparation (FSP)

Taper's background:

Taper duration – 7-30 days;
Sampling: swimmers, cyclists, runners, weightlifters, triathletes;
Outcomes: performance improvement of about 1-8%

Kubukeli et al., 2002; Mujika et al., 2004

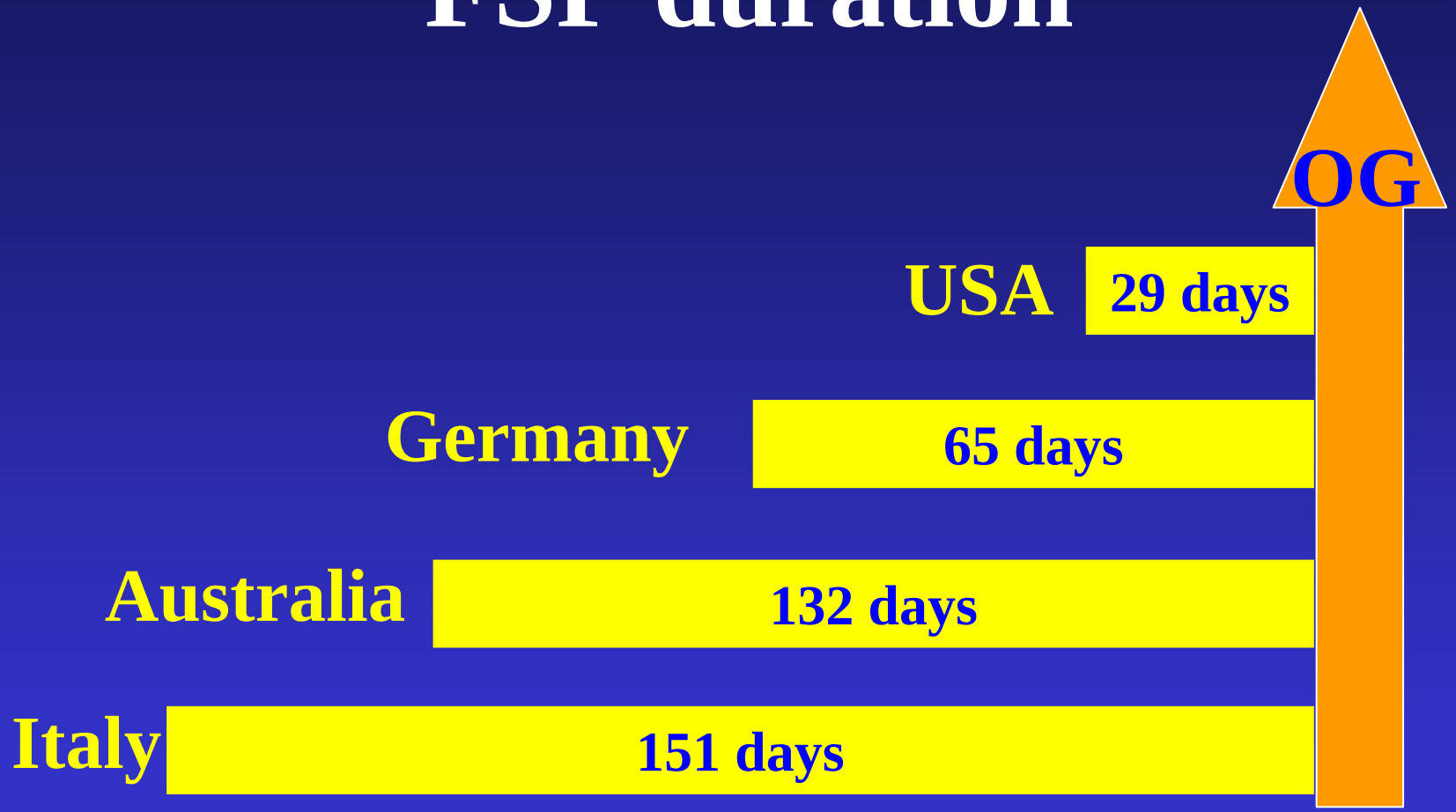
FSP – general scope

FSP prior the Sidney OG – average performance improvement : US swimming team – 0.2%; Australia swimming team – 0.6%

Pyne et al.,2004

Factors affecting peaking

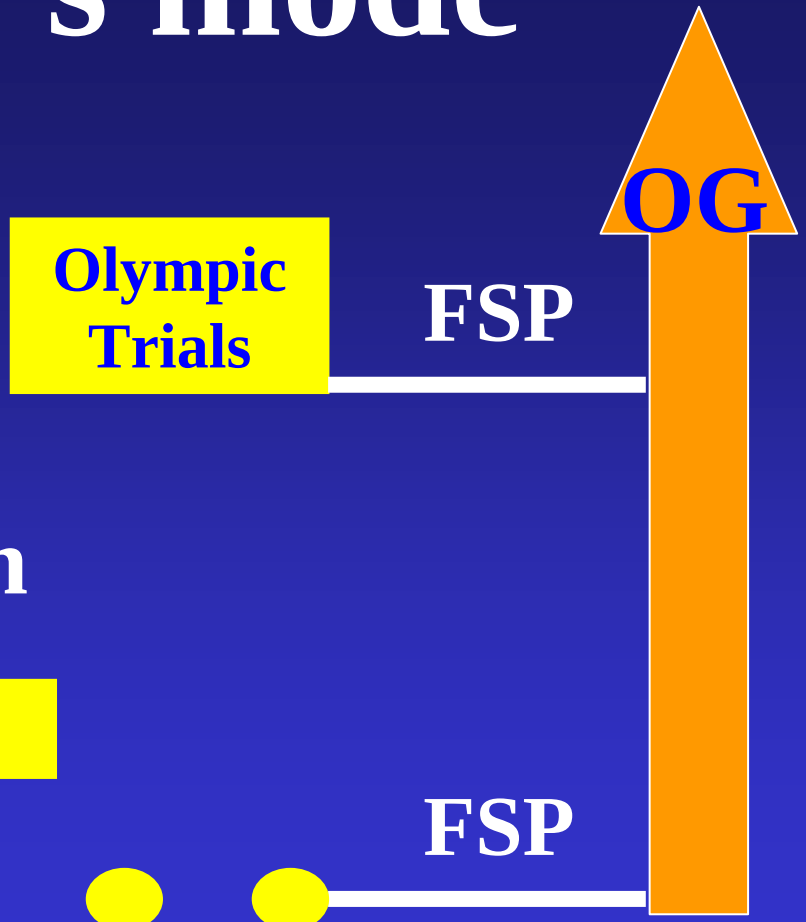
FSP duration



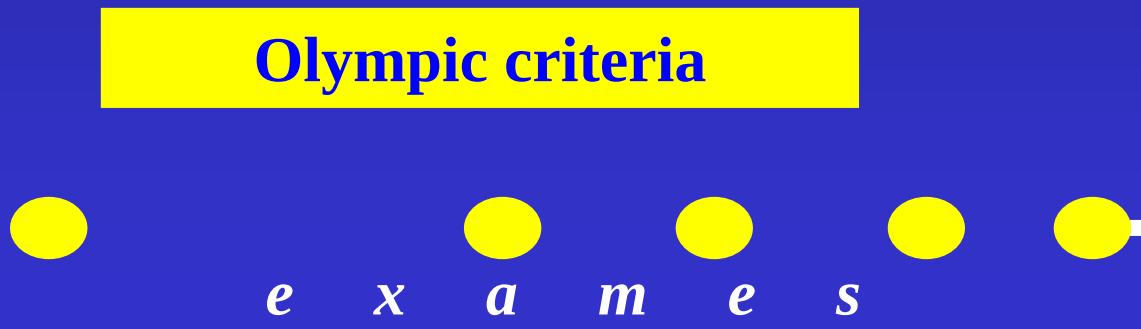
Factors affecting peaking

Selection's mode

1) Tough selection



2) Liberal selection



Factors affecting peaking

Age

Youngsters – till 20 yrs;
Middle age – 20-24 yrs;
Veterans – 25 yrs and more

Is it certain age category more favorable?

Gender

Female sex hormones can reinforce the influence of other hormones *(Viru, 1995)*

Does the athletes' gender affects the peaking?

Factors affecting peaking

Distance length

50, 100, 200, 400, 800 and 1500 m

Perhaps certain work duration is more favorable for peaking?

Swimming strokes

Is the peaking stroke dependent?

Crawl
Breaststroke
Backstroke
Butterfly
Medley

Factors affecting peaking

Personal athletic ranking

Category	Rank
Medalists	1 - 3
Finalists	4 – 8
Semi-finalists	9 – 16
Other	17 +

How the personal athletic rank affects the peaking?

Purpose:

to examine **the achievement of peak-performance by world-class swimmers and**
to evaluate **effects of several factors determining peaking in the Athens Olympic Games.**

Method

Sampling **–**

301 swimmers;

424 events (212 male and 212 female)

Method

9 world–leading teams;

187 swimmers -

tough selection

15 National teams;

114 swimmers -

liberal selection

Method

Relative Performance Gain *(RPG%)*

***RPG%* = entry time – final time/ entry time x 100**

Method

Descriptive statistics
Analysis of variance (ANOVA)
Linear regression

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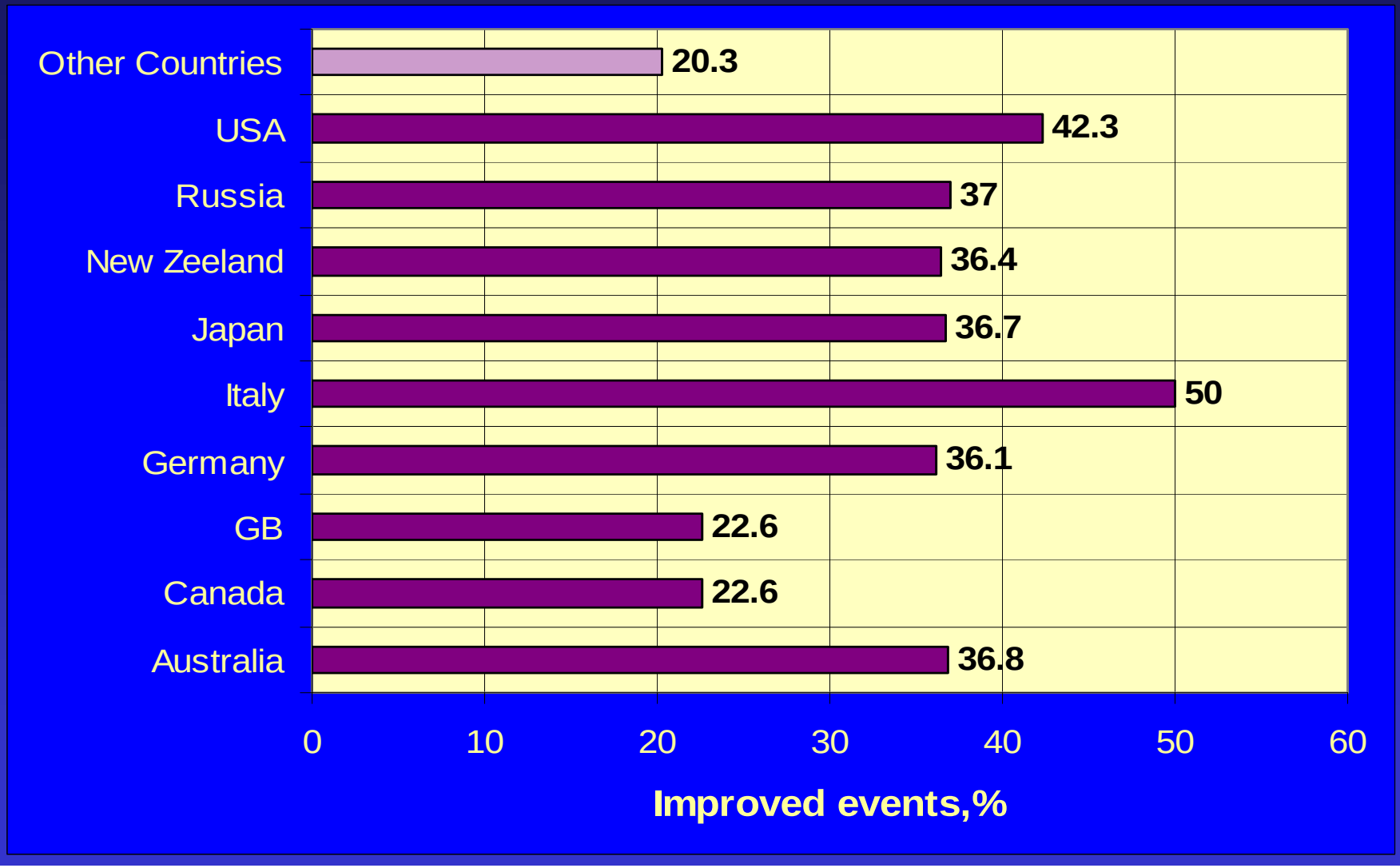
Swim-leading teams:

Country	Events' number
Australia	38
Canada	31
GB	31
Germany	36
Japan	30
Russia	27
USA	52
Italy	24
New Zeeland	22

The FSP length

Country	FSP, days
Australia	130
Canada	33
GB	123
Germany	65
Japan	109
Russia	87-81
USA	29
Italy	151
New Zeeland	131

Average improvement (%) in different teams



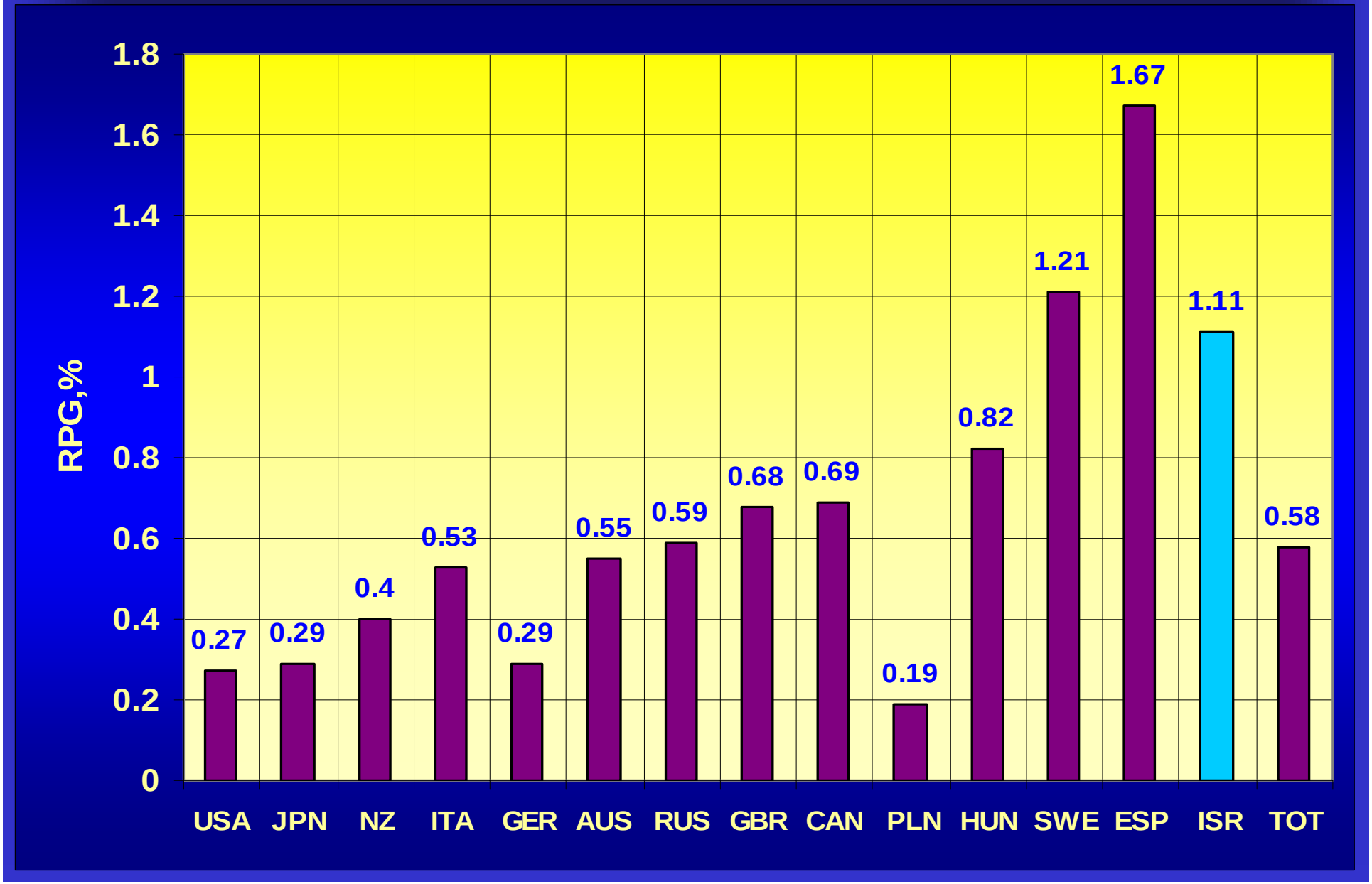
Results

Mean RPG% **Performance impairment** 0.58%

Performance improvement

68.2% of all Olympians declined their performances

RPG% by nation



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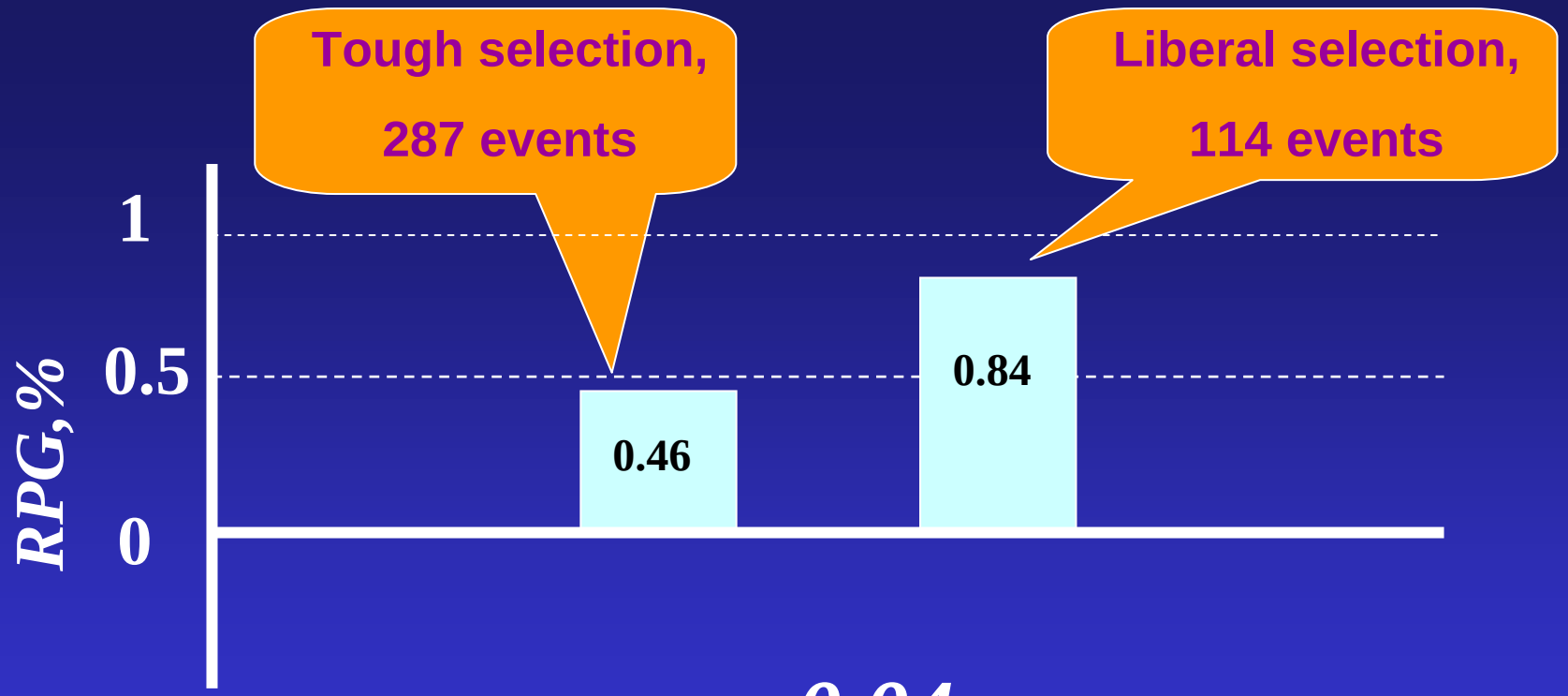
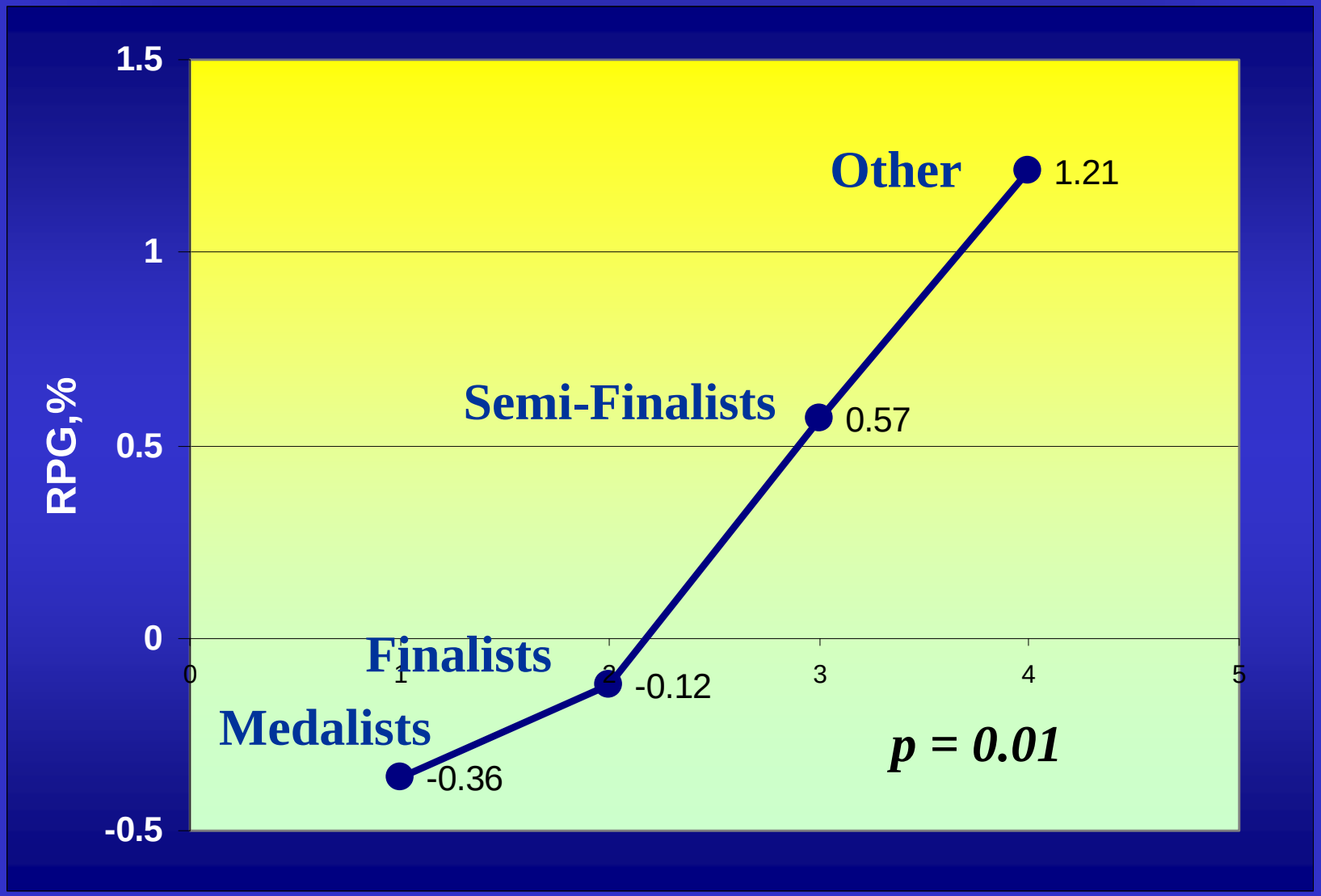
Results

Tough vs. liberal selection

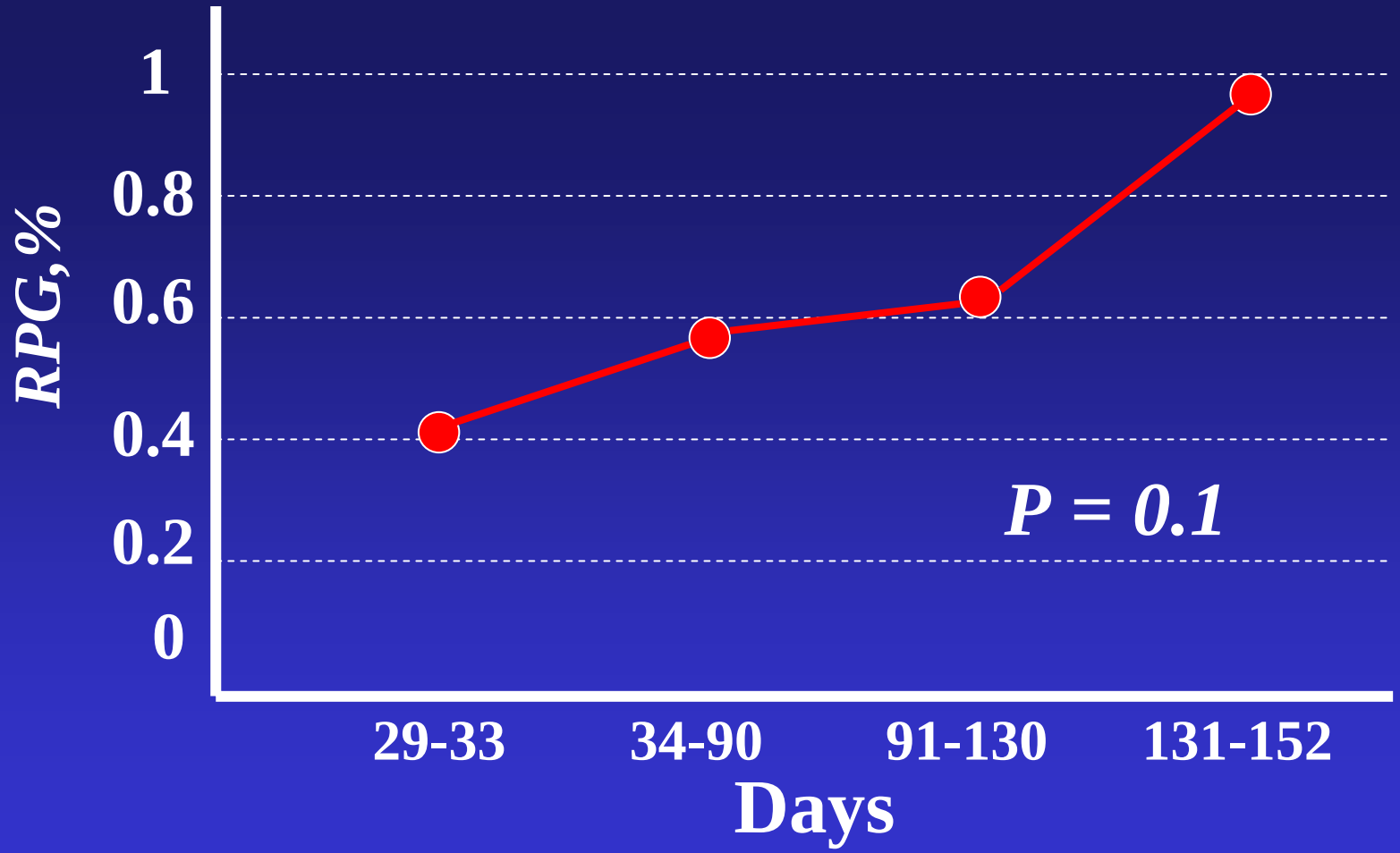


$p = 0.04$

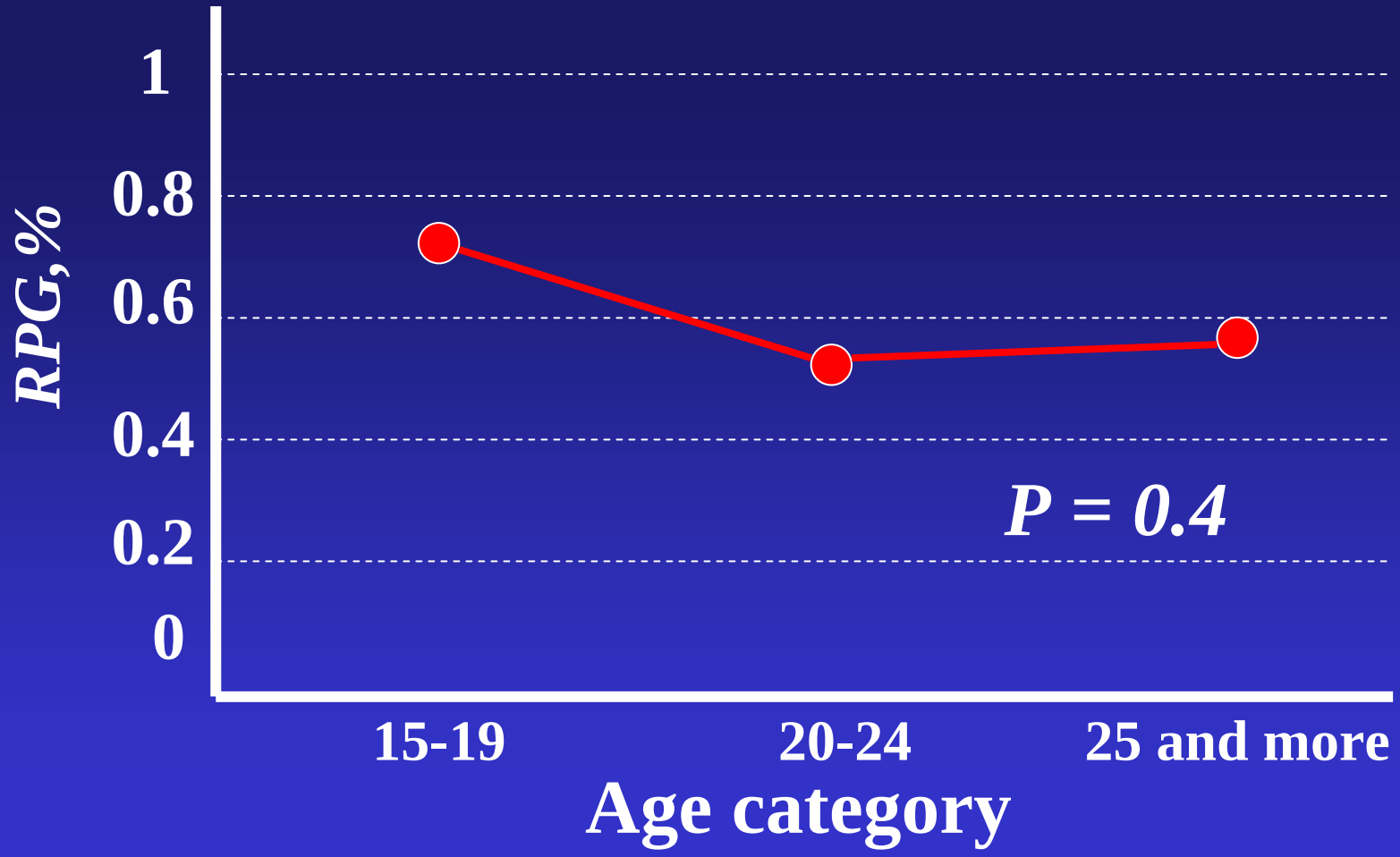
RPG% by personal athletic rank



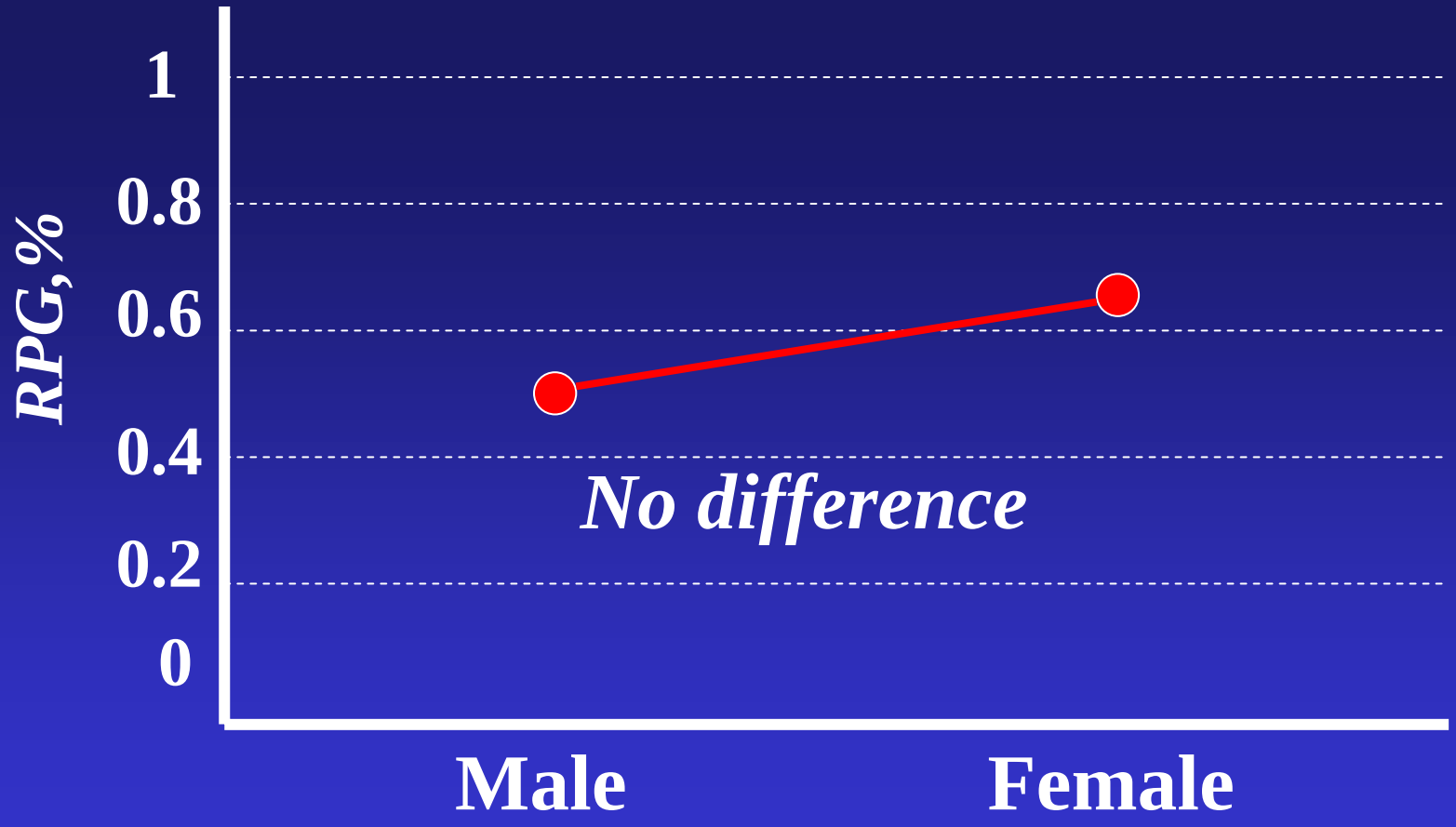
Impact of the FSP duration



Impact of the age



Impact of gender



No differences were found with regards to swimming strokes and distance length

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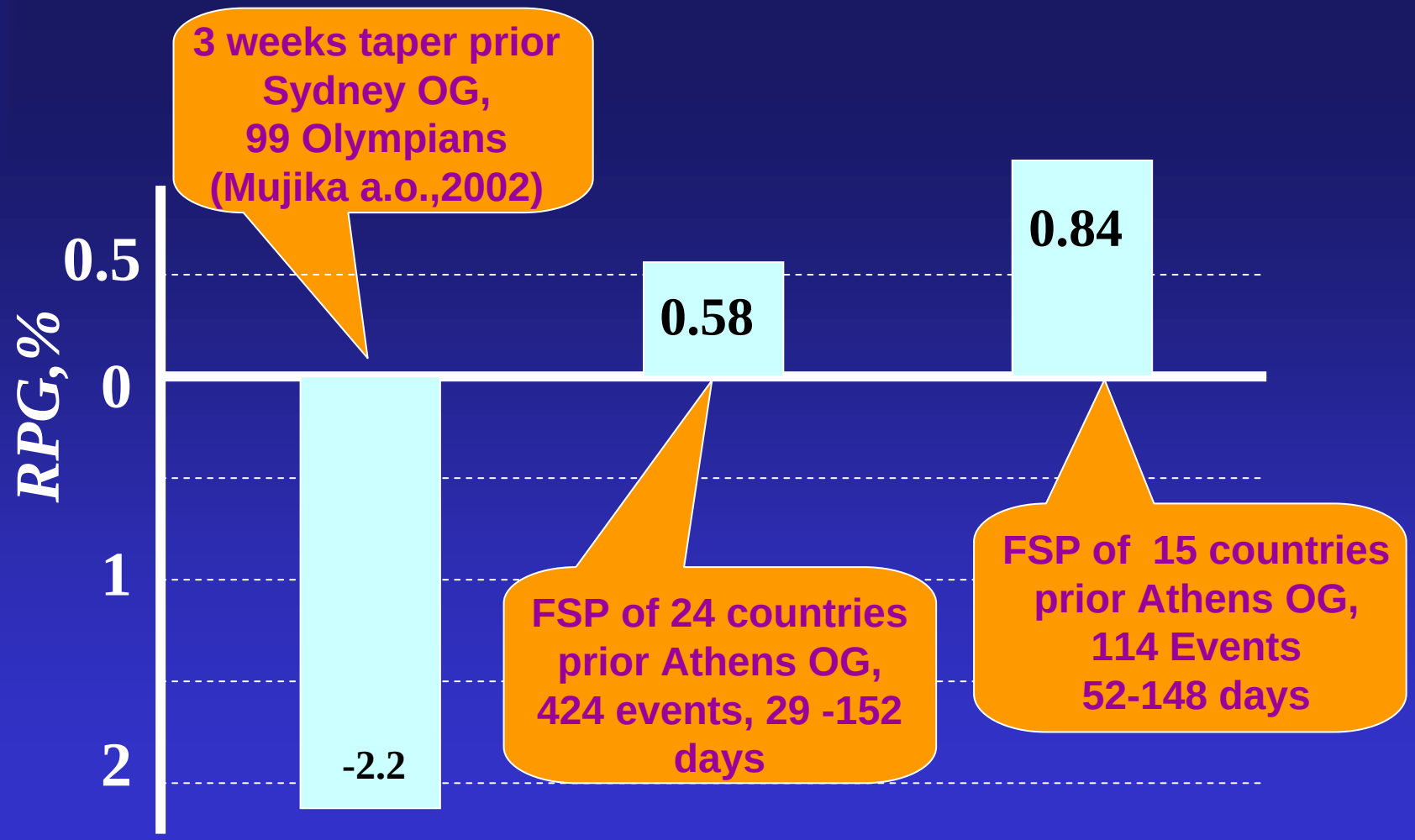
Impact of immediate pre-Olympic preparation



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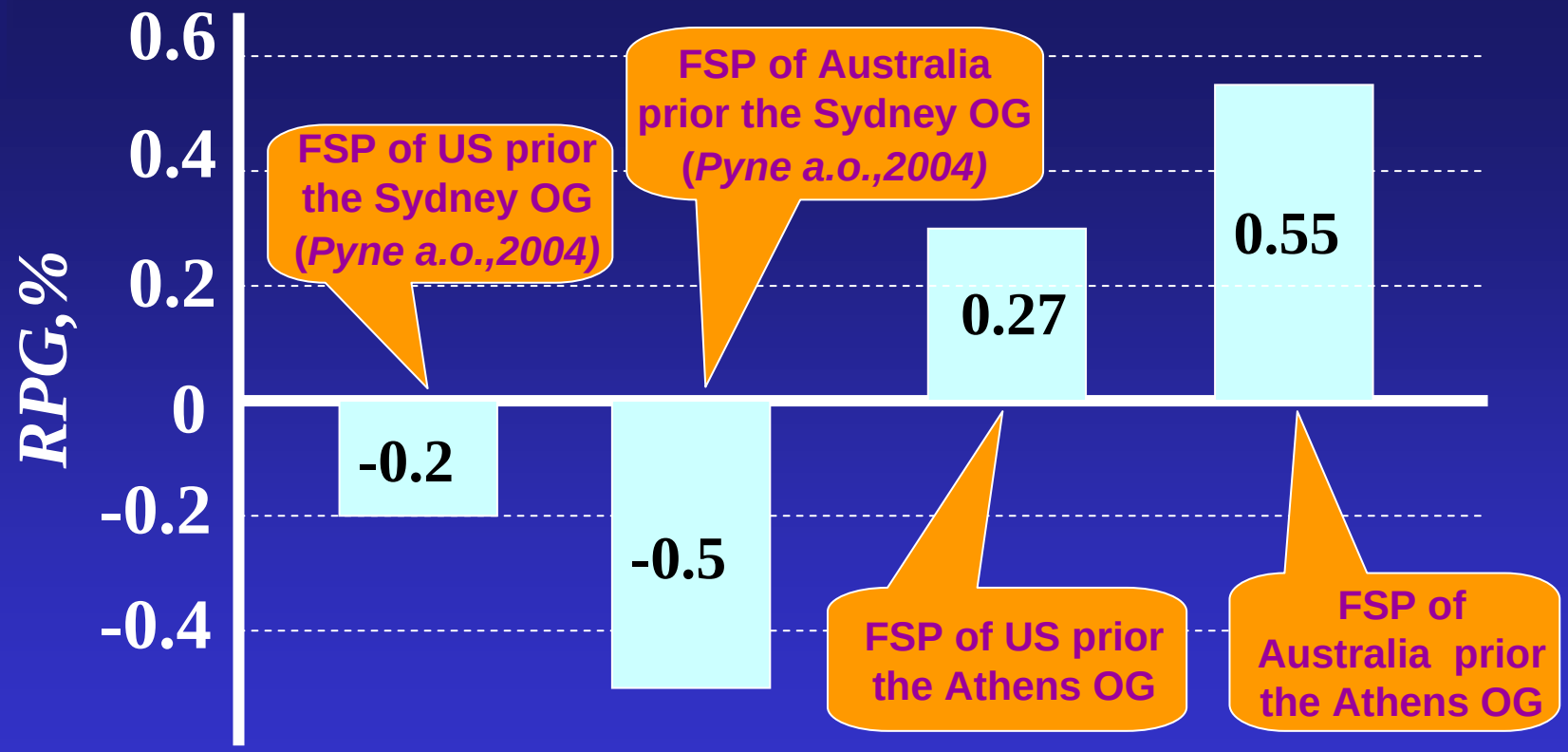


Factors affecting performance impairment:

(a) *emotional strain and anxiety*

(b) *hormonal and metabolic changes induced by emotional and physical stress*

(c) *training insufficiency during the FSP*

Facts:

Each athlete performs better when his/her level of anxiety falls within the "individual zone of optimal functioning“ (Hanin,1997)

Only 30 - 45% of competitors obtain their best results under high level of pre-competitive anxiety (Raglin & Hanin,1999)

World tendency:

Emotional strain and anxiety at the last Olympic events are more pronounced then previously

(Weinberg & Gould, 2003; Blumenshtein a.o.,2004)

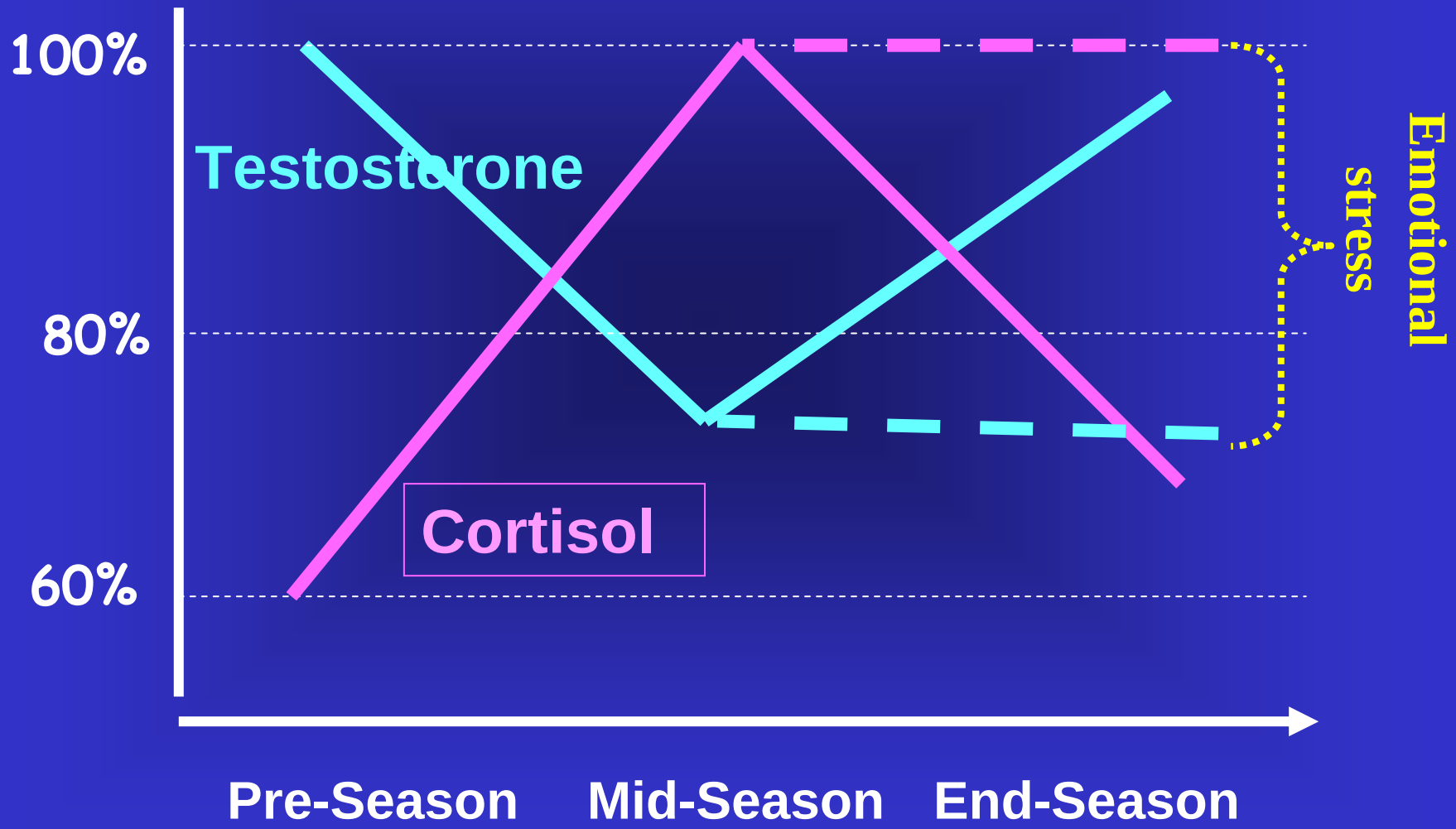
Fact

The rational model of hormonal changes suggests the decline of Testosterone level in the mid-season with subsequent increase prior the competition, and opposite dynamics for Cortisol (M. & A. Viru,2000)

The increased trait anxiety suppressed excretion of Testosterone during post-exercise recovery (Diamard,89), similarly the Cortisol level is also subjected by psychological stressors (Mujika a.o.,2004)

Annual hormonal trend

by Viru, 2000



Terminology

Residual training effect:

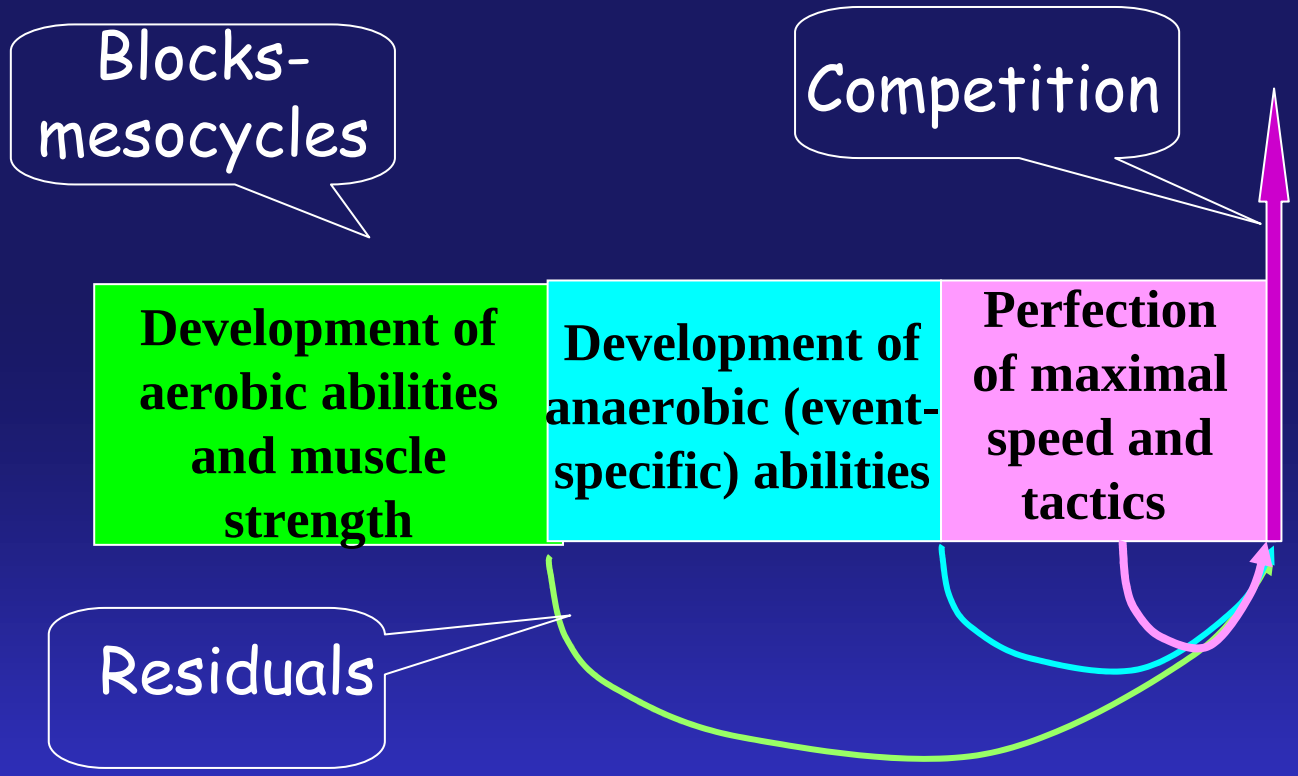
- retention of changes in the body state and motor abilities after the cessation of training beyond certain time period

Training insufficiency during the FSP:

- hormonal perturbations shift metabolic reactions into a direction of anaerobic prevalence and shortening of the aerobic and anabolic training residuals;

- this can follow to reduction of aerobic ability, muscle mass and power, which elicit of performance decline

Rational superposition of residual training effects



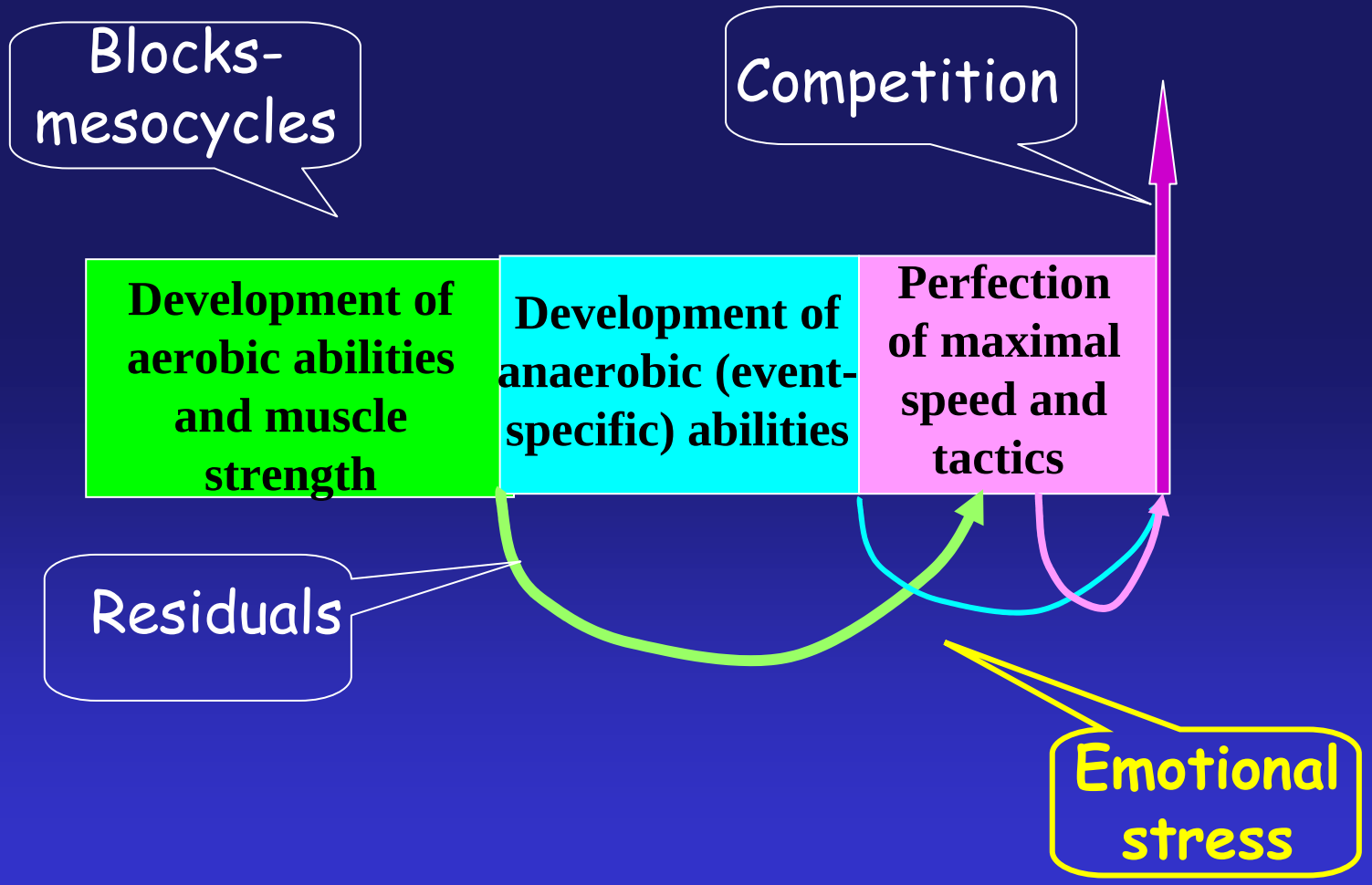
Issurin, Shkliar,2001

Fact:

Emotional strain and competitive activity shorten the training residuals

(Issurin & Lustig, 2004)

Residuals' superposition transformed by emotional stress



Conclusions:

The majority of Olympians don’t reach their personal best

The FSP, as a crucial stage for the peaking, should be studied, analyzed, and improved

The tough selection increases effectiveness of performances

Thank you