



CORSO NAZIONALE DI FORMAZIONE PER ESPERTI IN PREPARAZIONE FISICA NELLA PALLAVOLO

16° Edizione

Stagione sportiva 2022/2023

PROGRAMMA SECONDA SESSIONE

MILANO 25/27 LUGLIO 2023



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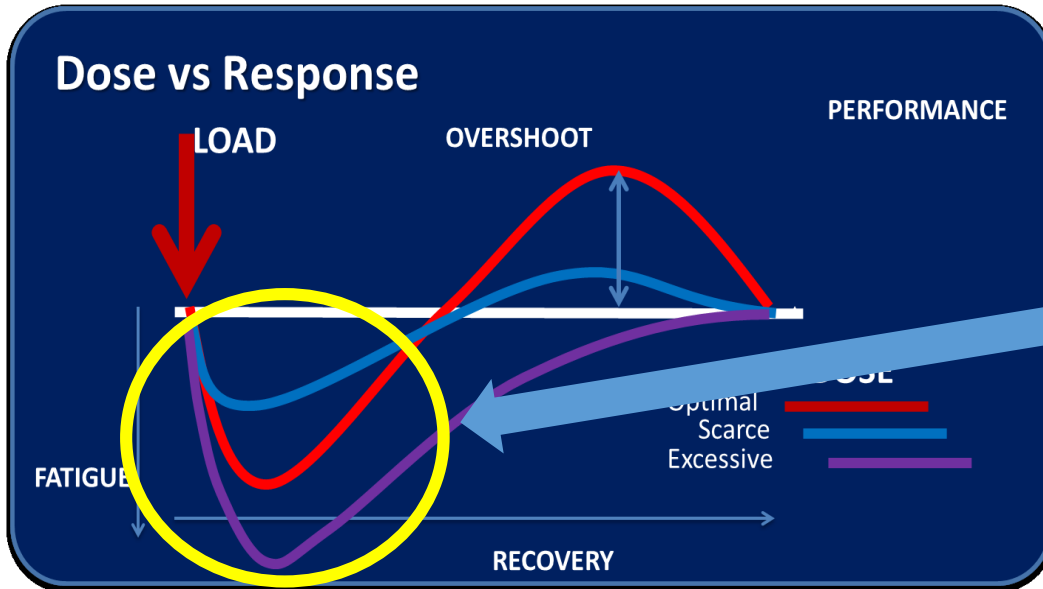
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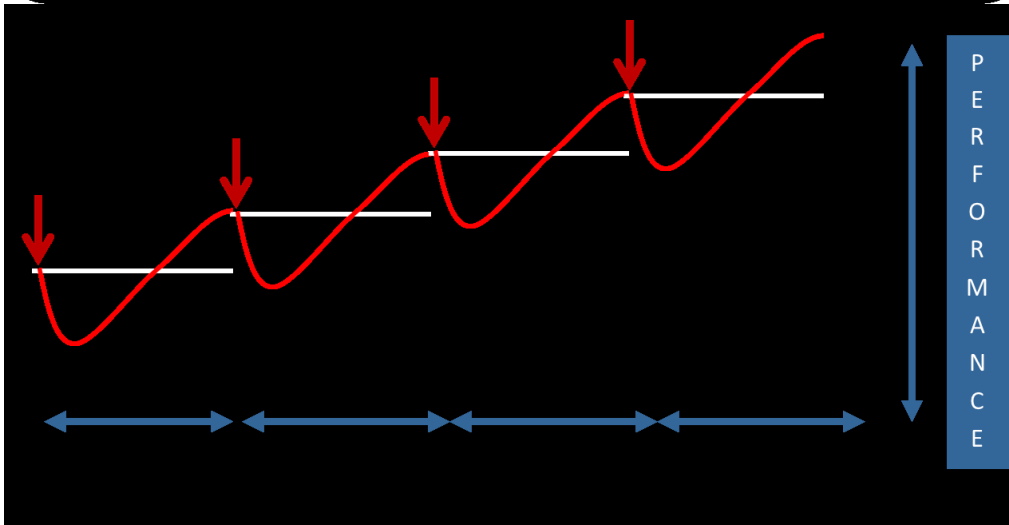


L'Allenamento

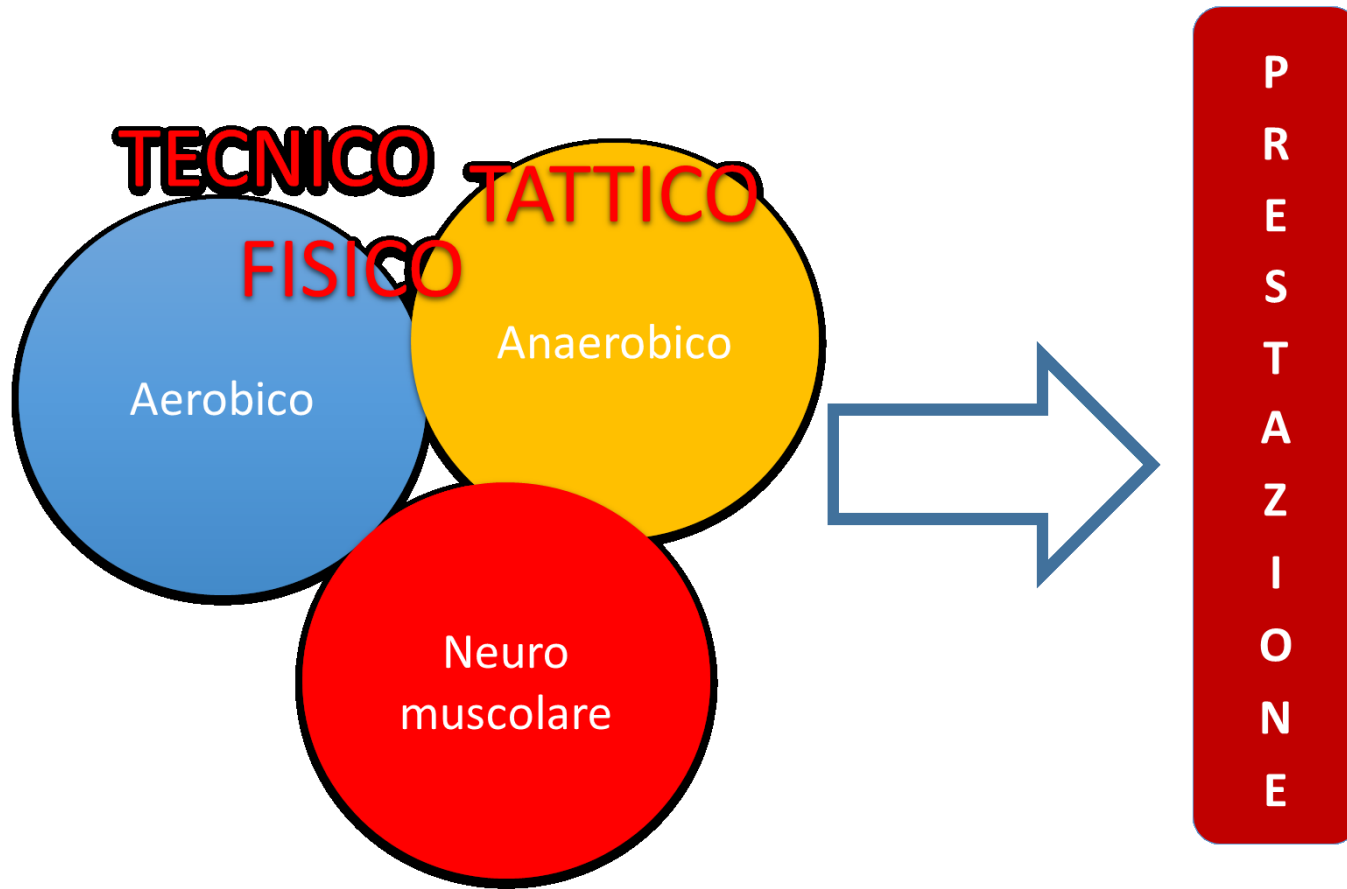


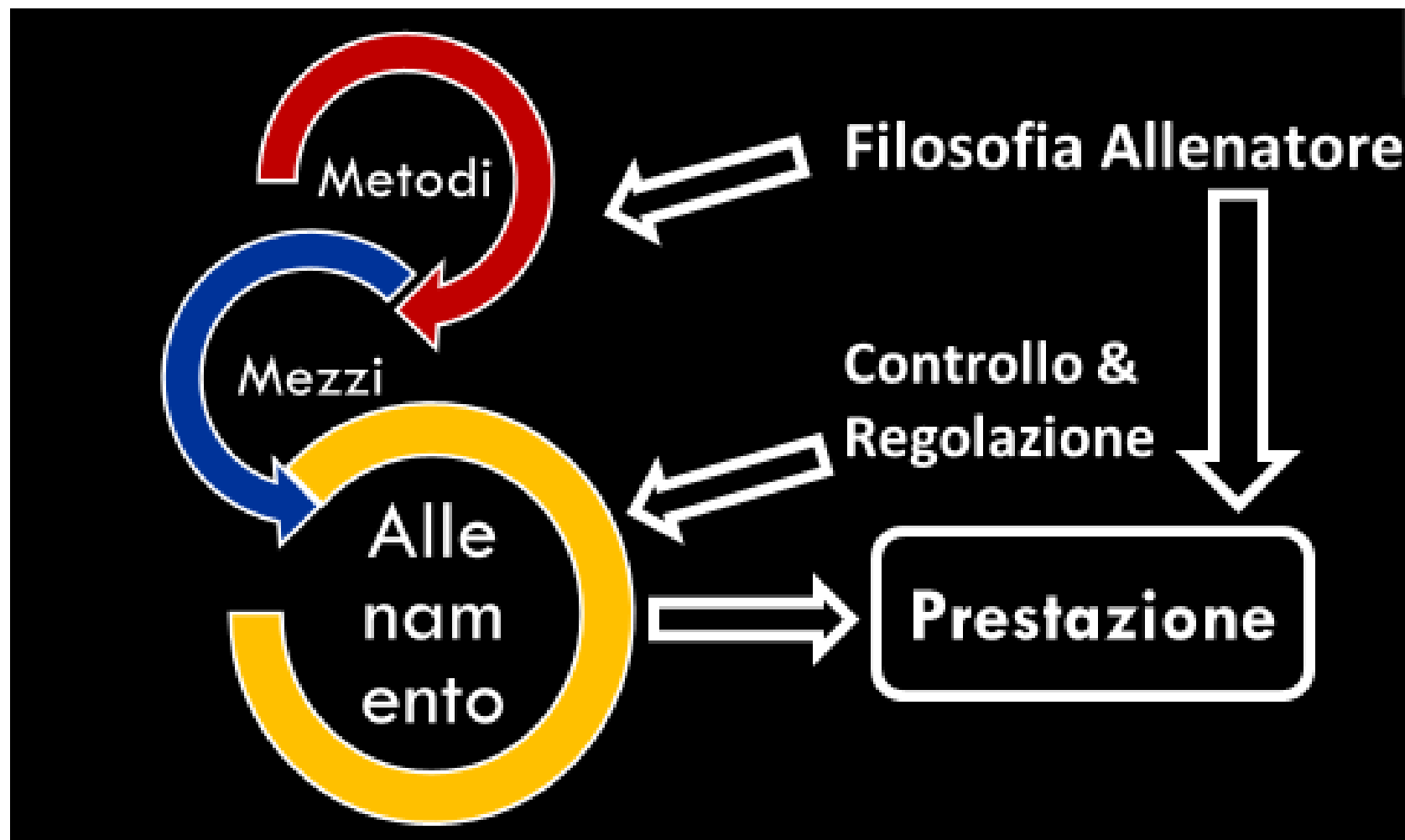
Risposta Atletica

- Oggettive Soggettive
- Soggettive Oggettive

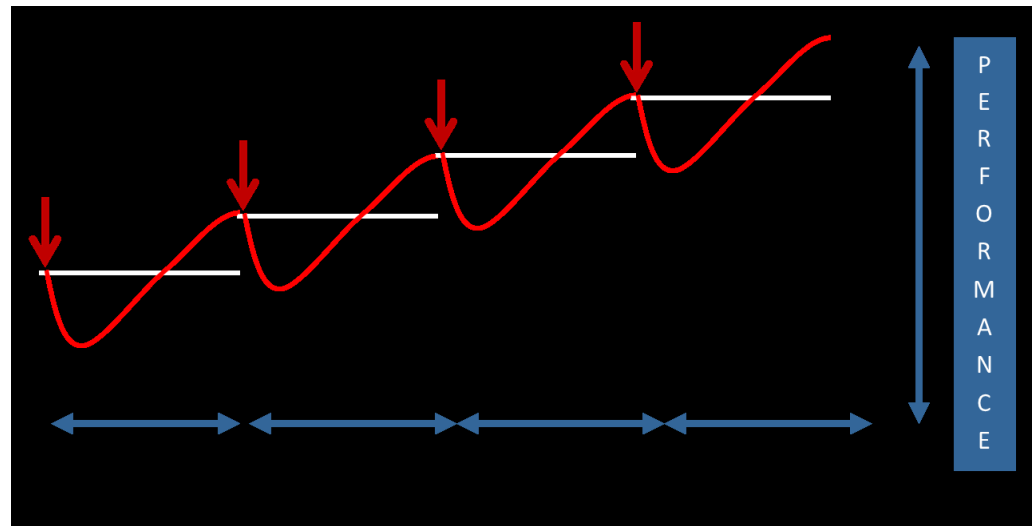
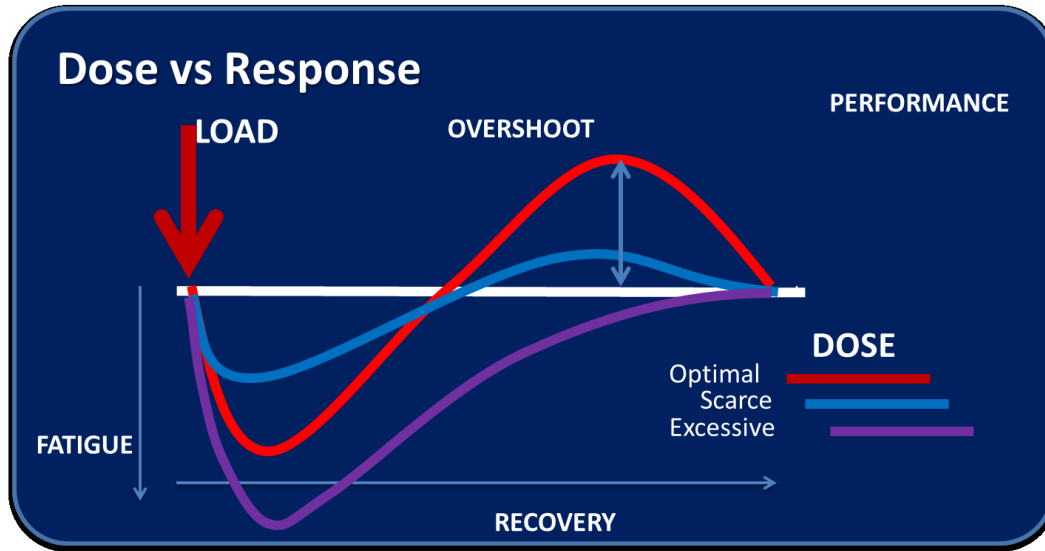


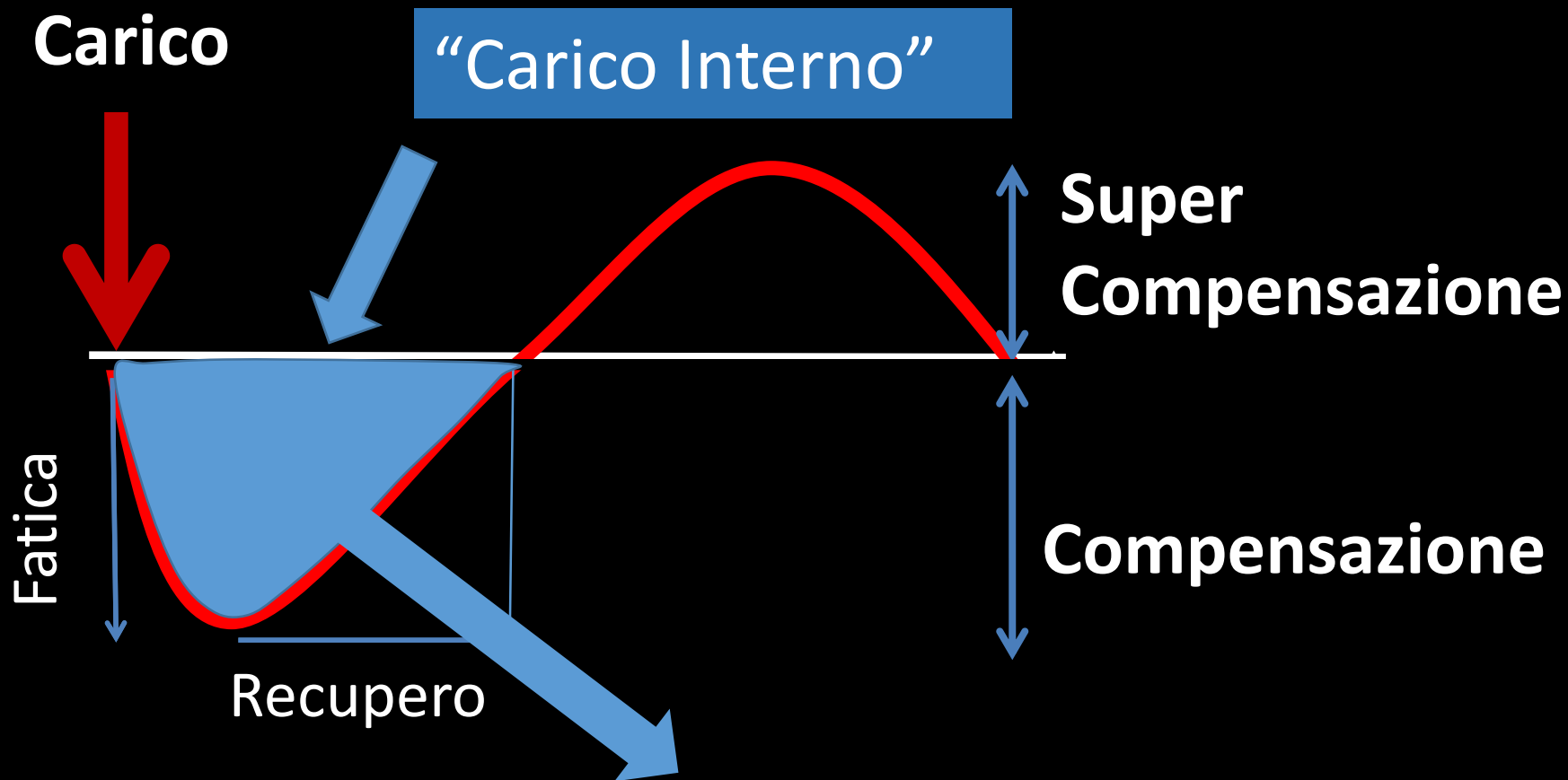
Allenamento & Prestazione





Dinamica del Carico





**"Risposte Bio-Psico- Fisiologiche
dell'Atleta al carico di Allenamento..."**

Prestazione = Fitness – Fatica

**Parole Chiave; Ormesi, Omeostasi, Allostasi,
Personalizzazione, Precisione**

Carico= Volume · Intensità

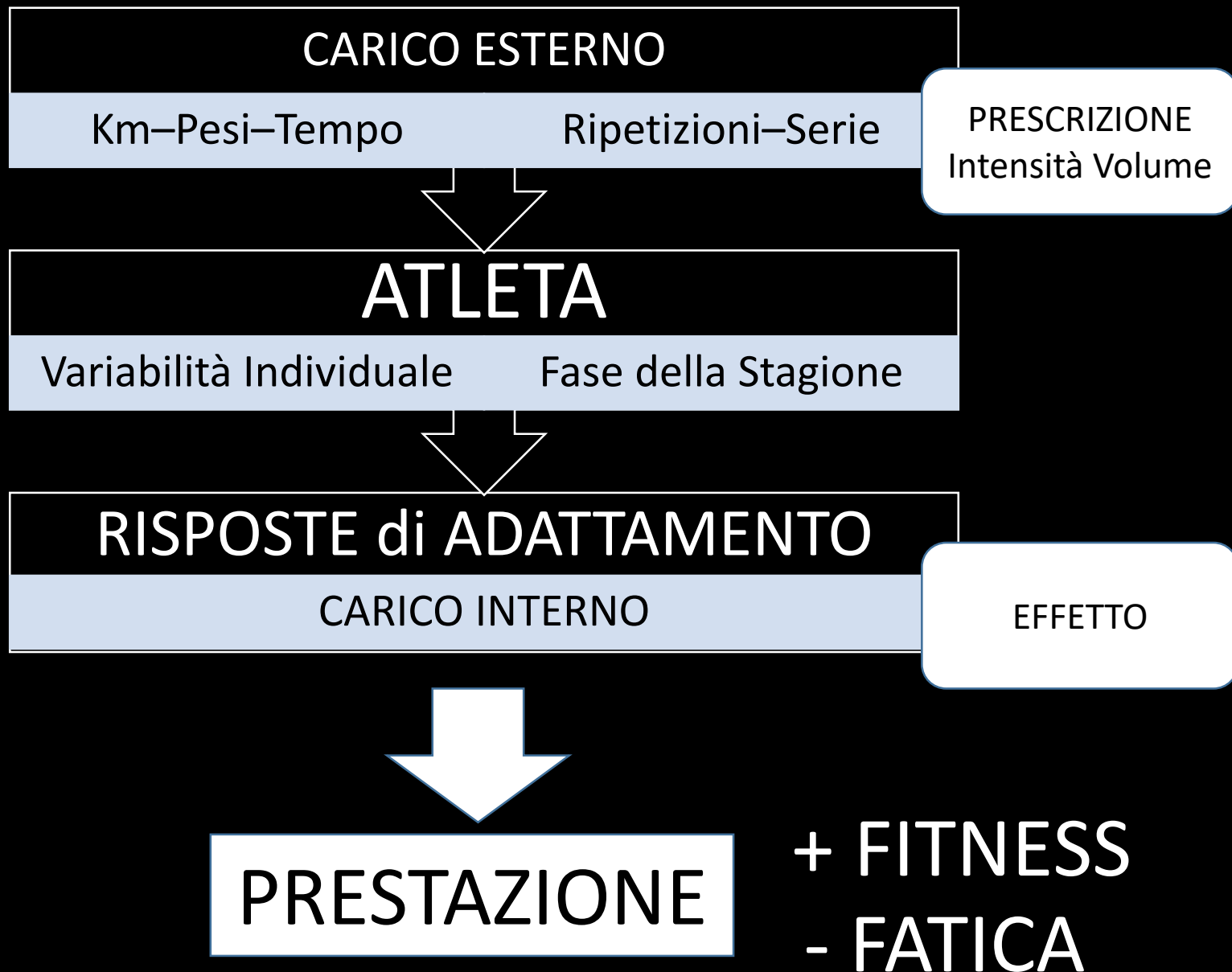
Azioni: Controllo@ Regolazione del Carico

Dose — Risposta

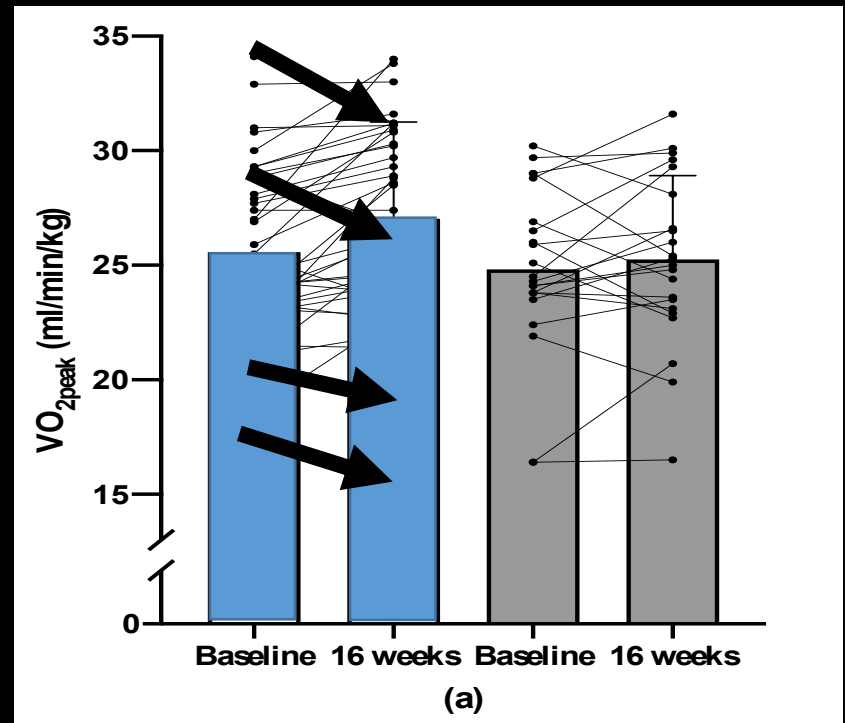
Ormesi

*“All things are poison
and nothing is without
poison, only the
dose permits something
not to be poisonous”*

Paracelsus

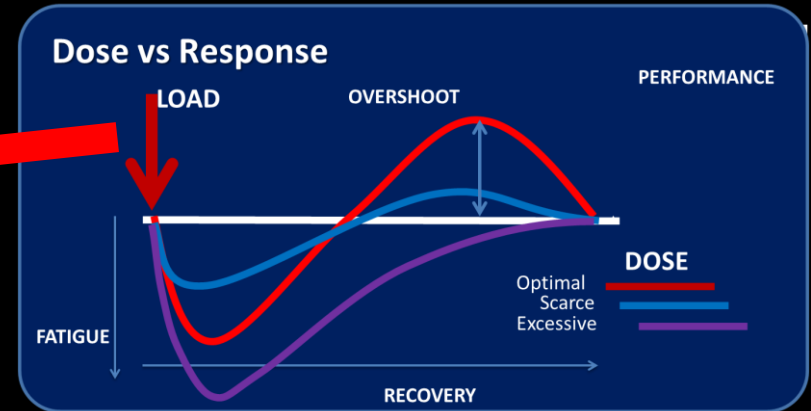


INDIVIDUALITA'



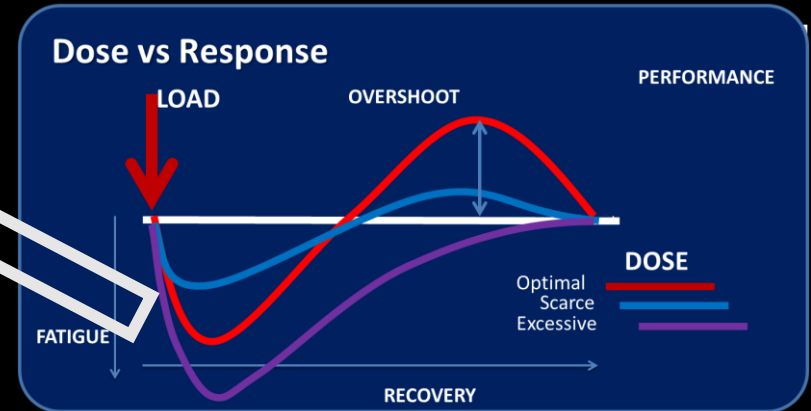
Carico Esterno

- Km/m/cm
- Kg da
- Tempo Esposizione
- Ripetizioni—Serie



Carico Interno

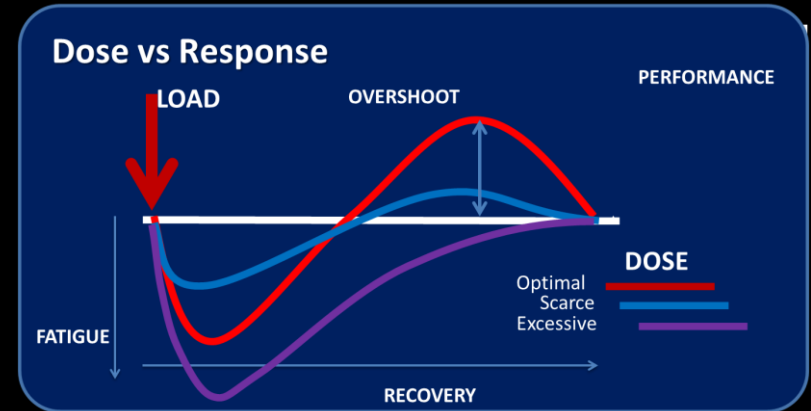
- Biochimica
- Consumo O₂
- Frequenza Cardiaca
- Lattato
- Percezione dello Sforzo
- Comportamento



Carico Interno

Feedback

- Real-Time
- Post-Hoc
- Implementazione
- Programmazione
- Analisi Metodologica



Metodi di Controllo

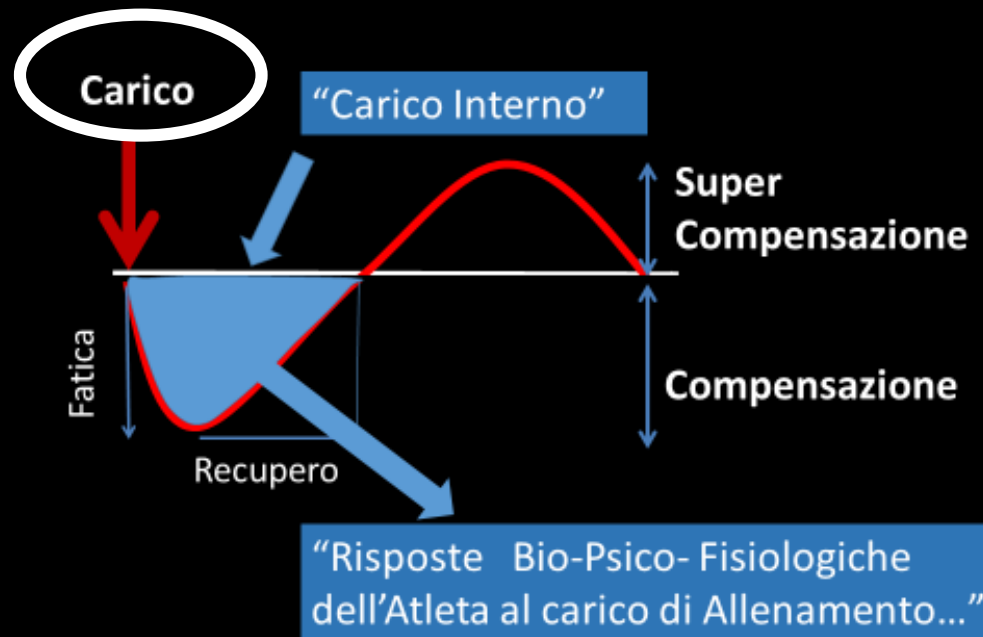
- **Invasivi**
- **Non–Invasivi**
- **Validi**
- **Sostenibili**

Oggettivo –Soggettivo

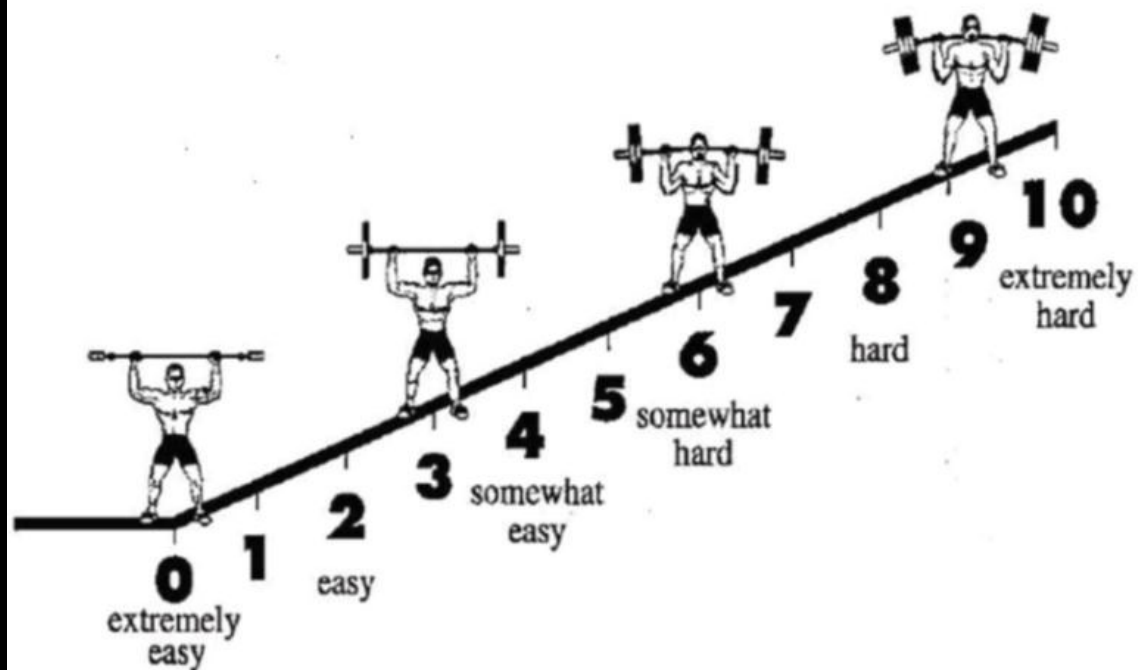
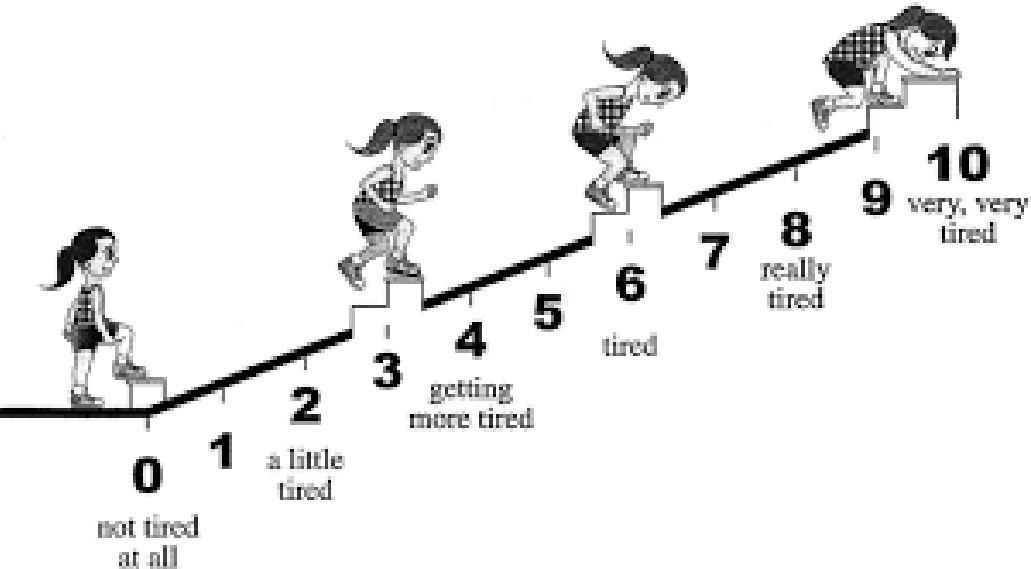
Soggettivo –Oggettivo

Prestazione = Fitness – Fatica

Maratona



Castagna - Seminari Tecnici per le Attività di Alto Livello - SDS 2020



Psychophysical bases of perceived exertion

GUNNAR A.V. BORG

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University of Stockholm
Box 5602
S-114 86 Stockholm, Sweden*

ABSTRACT

BORG, GUNNAR A.V. Psychophysical bases of perceived exertion. *Med. Sci. Sports Exercise*, Vol. 14, No. 5, pp. 377-381, 1982. There is a great demand for perceptual effort ratings in order to better understand man at work. Such ratings are important complements to behavioral and physiological measurements of physical performance and work capacity. This is true for both theoretical analysis and application in medicine, human factors, and sports. Perceptual estimates, obtained by psychophysical ratio-scaling methods, are valid when describing general perceptual variation, but category methods are more useful in several applied situations when differences between individuals are described. A presentation is made of ratio-scaling methods, category methods, especially the Borg Scale for ratings of perceived exertion, and a new method that combines the category method with ratio properties. Some of the advantages and disadvantages of the different methods are discussed in both theoretical-psychophysical and psychophysiological frames of reference.

PERCEIVED EXERTION, RATIO SCALES, CATEGORY SCALES

Need of Methods to Quantify Symptoms

During recent decades we have become more interested in how people feel, what aches and pains they have, and how difficult they perceive their work to be. Most scientists and practitioners in the health sciences agree that it is important to understand subjective symptoms and how they relate to objective findings. Therefore, we must develop methods to quantify these subjective symptoms. These methods should be equally applicable to most people regardless of gender, age, circumstances, and national origin.

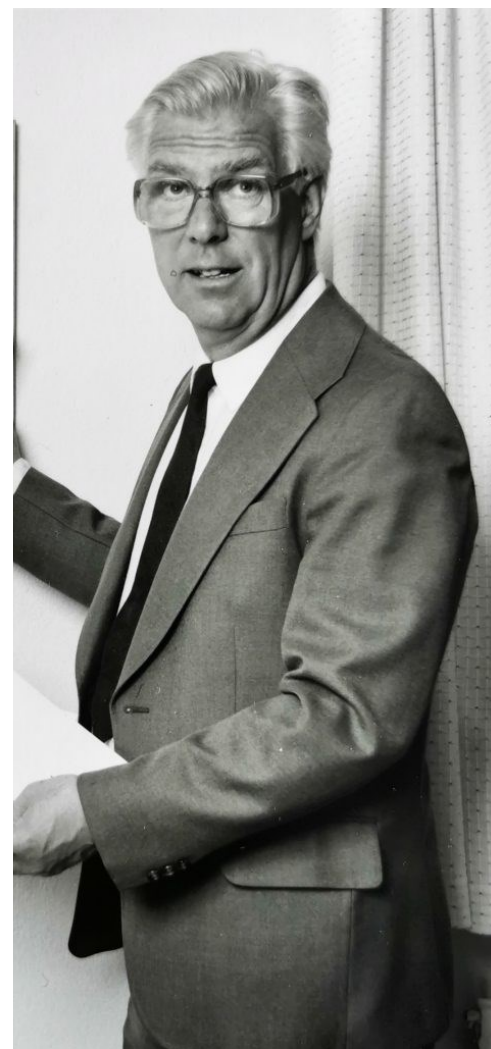
Perceived Exertion as an Indicator of Physical Strain

In my opinion perceived exertion is the single best indicator of the degree of physical strain. The overall perceived exertion rating integrates various information, including the many signals elicited from the peripheral working muscles and joints, from the central cardiovascular and respiratory functions, and from the central nervous system. All these signals, perceptions, and experiences are integrated into a configuration or "Gestalt" of perceived exertion.

Psychophysical Ratio-Scaling Methods

The need to devise better methods to measure perceptual intensities led to the development of several so-called "ratio-scaling methods" (13,14). It was the scientists' goal to develop methods that had the same metric qualities as methods used in physics and physiology, i.e., methods with an absolute zero and with the same distance between all scale values. One such method is "ratio production," in which subjects are asked to increase or decrease a certain variable stimulus until it is perceived to be a certain fraction or multiple of a standard stimulus. For example, in an experiment concerning brightness, taste, or loudness, each subject is asked to set the variable stimulus to be half or twice as intense as a certain standard stimulus. When this is performed throughout the whole intensity continuum, possibilities can be obtained to construct a psychophysical scale, i.e., a scale describing how the perceived intensity varies with the actual physical intensity.

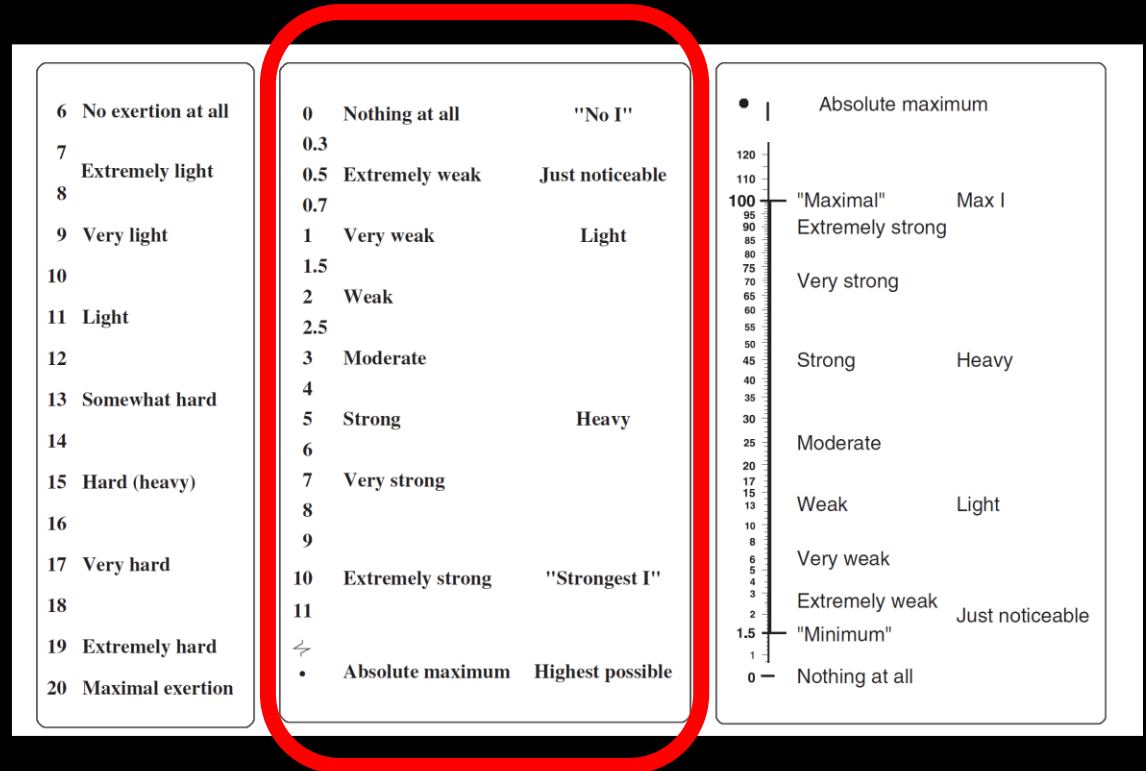
A simple example taken from everyday experiences



Di che si parla?

Scales?

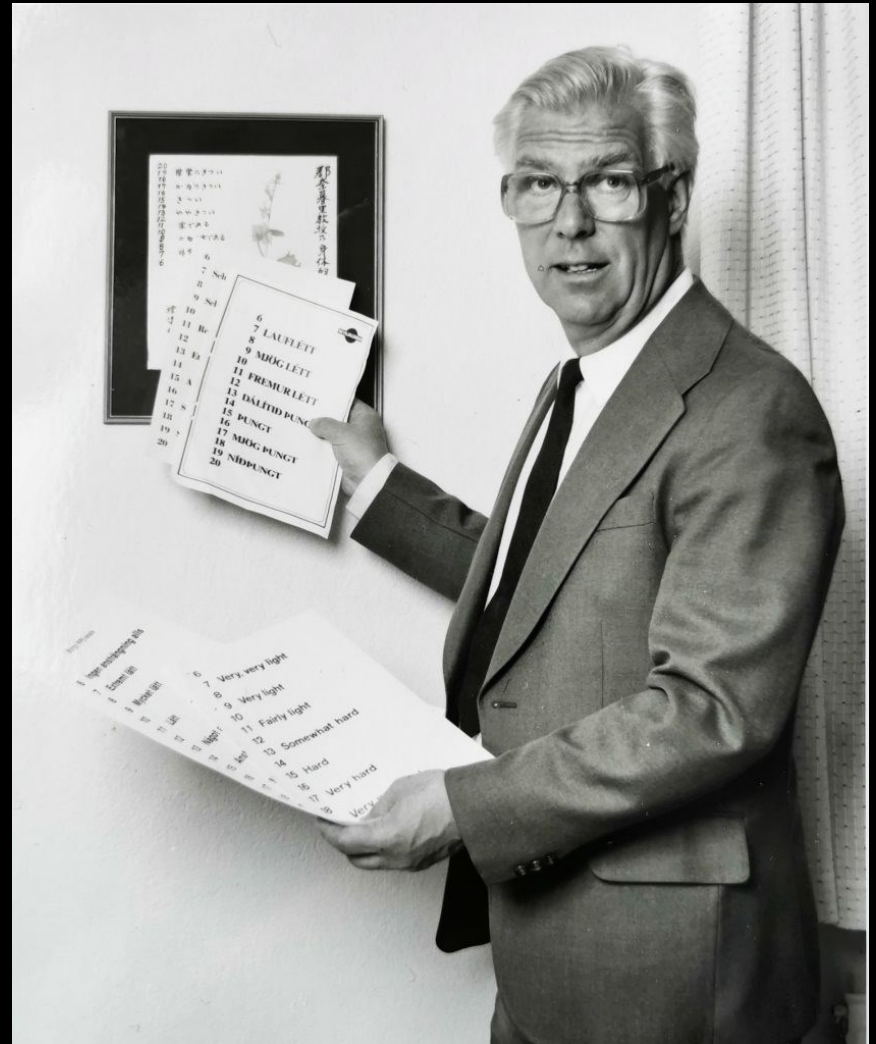
- Performance
- Recovery
- Coaching
- Prescription
- Grouping



Scala di Börg

0	Assente	
0,3		
0,5	Estremamente lieve	Appena Percepibile
0,7		
1	Molto lieve	
1,5		
2	Lieve	Leggero
2,5		
3	Moderato	
4		
5	Forte	Intenso
6		
7	Molto forte	
8		
9		
10	Estremamente forte	"Massimo"
11		
↵		
●	Massimo in assoluto	Massimo pensabile

Borg CR10 Scale®
© Gunnar Borg, 1982, 1998, 2004
Italian
Italiano



Stima Carico Interno: S-RPE

● Intensità media training



● Example

● Session-RPE

$$\frac{5 \times 60\text{min}}{= 300 \text{ AU}}$$

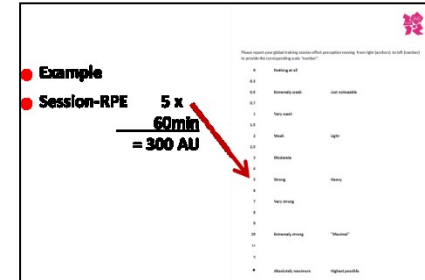
Please report your global training session effort perception moving from right (anchors) to left (number) to provide the corresponding scale "number".

0	Nothing at all	
0.3		
0.5	Extremely weak	Just noticeable
0.7		
1	Very weak	
1.5		
2	Weak	Light
2.5		
3	Moderate	
4		
5	Strong	Heavy
6		
7	Very strong	
8		
9		
10	Extremely strong	"Maximal"
11		
∞		
•	Absolutely maximum	Highest possible

Stima Carico Interno:

Session-RPE (S-RPE)

- Scala CR10 Börg
- Tempo di allenamento
- $S-RPE = RPE \times \text{Tempo}$
- Intensità media training
- Timing



Recovery Rate → Prescription?



● **Coach decision**

● **Training Load**

Let's ask for:

● **Athlete Availability**

● **For Training Intensity**

Recovery Rate → Prescription?



- **Coach decision**

- **Training Load**

Let's ask for:

- **Athlete Availability**

- **For Training Intensity**

Training Intensity Availability (TIA)



Because of my quality of **recovery** what are my **feelings** about **training today**?



	<u>TRAINING Feelings</u>	<u>RECOVERY Status</u>
0	Full Rest	Nothing at all
0.3		
0.5	Regeneration Exercises	Extremely poor Recovery
0.7		
1	Very low intensity training	Very poor Recovery
1.5		
2	Light training no High-Intensity	Poor Recovery
2.5		
3	Moderate Intensity Training	Moderate Recovery
4		
5	High-Intensity Training	Good Recovery
6		
7	Very High-Intensity Training	Very Good Recovery
8		
9		
10	Competition Ready	Full Recovery



Castagna and Bizzini 2013

Training Intensity Availability (TIA)



Because of my quality of **recovery** what are my **feelings** about **training today**?



	<u>TRAINING Feelings</u>	<u>RECOVERY Status</u>
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4		
5	High-Intensity Training	Good Recovery
6		
7	Very High-Intensity Training	Very Good Recovery
8		
9		
10	Competition Ready	Full Recovery



HI Group
Today Training

Castagna and Bizzini 2013

Conclusions

PS Useful for:

- **Coach Education**
- **Prescription**
- **Holistic Assessment of Recovery**
- **Validity Levels ?**



Teoria delle Misure

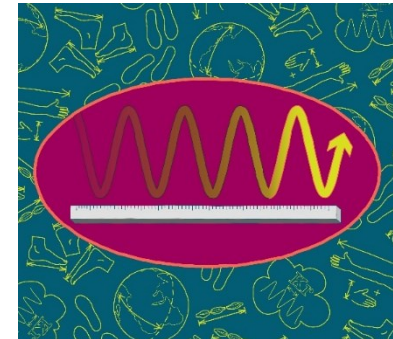
Test

Ripetibilità

Validità

**“Posso o no
possono
riprodurre
l’evento”**

**“Sono sicuro
che misuro
quello che
voglio?”**



Teoria delle Misure

Test

Ripetibilità

Validità

**“Posso o no
possono
riprodurre
l’evento”**

**“Sono sicuro
che misuro
quello che
voglio?”**



Teoria delle Misure

“Posso riprodurre l'evento”?

SI

NO



Ripetibilità



Teoria delle Misure

○ **Accuratezza**



○ **Precisione**



Ripetibilità

Assoluta

**Variazioni della
Media del test
tra T1 e T2**

Relativa

**Variazioni
dell'Ordine dei
risultati del test tra
T1 e T2**



Ripetibilità

Relativa

Relativa

Variazioni dell'ordine
dei risultati del test tra
T1 e T2...

T1	T2	T3
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6

ICC=1

r=1

Ripetibilità

Assoluta

Variazioni della Media del test
tra T1 e T2



$$\Delta=0$$

Ripetibilità Assoluta

TABLE 1. Mean values of the repeated sprint ability (RSA) variables considered in this study (see Methods) across the testing occasions (T1–T5).*

Variable	T1	T2	T3	T4	T5
Best sprint (s)	4.63 ± 0.30	4.69 ± 0.30	4.73 ± 0.30*	4.72 ± 0.30*	4.71 ± 0.30*
Total time (s)	23.58 ± 1.60	23.98 ± 1.60*	24.23 ± 1.80*	24.13 ± 1.70*	24.10 ± 1.60*
%Ideal time	1.86 ± 1.00	2.38 ± 1.30	2.52 ± 1.10	2.29 ± 1.20	2.43 ± 1.30
%First-Last	−0.19 ± 0.10	−0.22 ± 0.10	−0.25 ± 0.10	−0.22 ± 0.10	−0.23 ± 0.10

* $p < 0.05$

TABLE 2. Relative and absolute reliability variables across repeated sprint ability (RSA) trials.*

Trials	T2-1	T3-1	T4-3	T5-4
ICC best sprint	0.97 (0.93 to 0.99)	0.97 (0.94 to 0.99)	0.98 (0.95 to 0.99)	0.94 (0.88 to 0.97)
TEM raw (s)	0.06 (0.05 to 0.08)	0.06 (0.05 to 0.08)	0.06 (0.04 to 0.08)	0.08 (0.07 to 0.11)
TEM as %CV	1.2 (0.9 to 1.7)	1.1 (0.9 to 1.7)	1.2 (0.9 to 1.7)	1.9 (1.4 to 2.8)
Change in mean (s)	0.05 (0.02 to 0.09)	0.10 (0.06 to 0.13)	−0.01 (−0.04 to 0.02)	−0.01 (−0.06 to 0.04)
ICC total time	0.98 (0.95 to 0.99)	0.96 (0.92 to 0.98)	0.98 (0.95 to 0.99)	0.93 (0.86 to 0.96)
TEM raw (s)	0.26 (0.22 to 0.35)	0.36 (0.29 to 0.47)	0.29 (0.24 to 0.39)	0.47 (0.38 to 0.61)
TEM as %CV	1.2 (1.0 to 1.7)	1.5 (1.2 to 2.1)	1.4 (1.1 to 1.9)	1.7 (1.4 to 2.3)
Change in mean (s)	0.39 (0.27 to 0.52)	0.65 (0.48 to 0.82)	−0.11 (−0.25 to 0.03)	−0.02 (−0.24 to 0.20)
ICC %Ideal time	0.34 (0.02 to 0.60)	0.52 (0.23 to 0.72)	0.38 (0.07 to 0.63)	0.27 (−0.05 to 0.55)
TEM raw (s)	0.94 (0.76 to 1.22)	0.76 (0.62 to 0.99)	0.94 (0.77 to 1.24)	1.11 (0.90 to 1.45)
TEM as %CV	66.1 (49.6 to 100.4)	46.5 (35.4 to 68.7)	45.3 (34.5 to 66.8)	78.2 (58.2 to 120.7)
Change in mean (s)	0.52 (0.07 to 0.96)	0.65 (0.29 to 1.01)	−0.22 (−0.67 to 0.22)	0.14 (−0.38 to 0.67)
ICC %First-Last	0.24 (−0.09 to 0.52)	0.30 (−0.02 to 0.57)	0.33 (0.01 to 0.59)	0.07 (−0.26 to 0.38)
TEM raw (s)	0.08 (0.06 to 0.10)	0.07 (0.06 to 0.09)	0.08 (0.07 to 0.11)	0.10 (0.08 to 0.13)
TEM as %CV	43.1 (32.9 to 63.4)	43.5 (33.2 to 64.0)	40.6 (31.0 to 59.4)	70.2 (52.6 to 107.3)
Change in mean (s)	0.03 (0.00 to 0.07)	0.06 (0.03 to 0.10)	−0.03 (−0.07 to 0.01)	0.01 (−0.03 to 0.06)

*ICC = intraclass correlation coefficient; TEM = typical error for measurement; %CV = percentage of coefficient of variation.

RELIABILITY CHARACTERISTICS AND APPLICABILITY OF A REPEATED SPRINT ABILITY TEST IN YOUNG MALE SOCCER PLAYERS

CARLO CASTAGNA,^{1,2} FRANCINI LORENZO,¹ PETER KRUSTRUP,³ JULIANO FERNANDES-DA-SILVA,⁴ SUSANA C.A. PÓVOAS,⁵ ANDREA BERNARDINI,² AND STEFANO D'OTTAVIO²

¹Fitness Training and Biomechanics Laboratory, Italian Football Federation, Technical Department, Cocciano, Italy;

²University of Rome Tor Vergata, Rome, Italy; ³Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark; ⁴Physical Effort Laboratory, Sports Center, Federal University of Santa Catarina, Florianópolis, Brazil; and ⁵Research Center in Sports Sciences, Health Sciences and Human Development, CIDEAD, University Institute of Maia, ISMAI, Maia, Portugal

ABSTRACT

Castagna, C, Lorenzo, F, Krstrup, P, Fernandes-da-Silva, J, Póvoas, SCA, Bernardini, A, and D'Ottavio, S. Reliability characteristics and applicability of a repeated sprint ability test in young male soccer players. *J Strength Cond Res* 32(6): 1538–1544, 2018. The aim of this study was to examine the usefulness and reliability characteristics of a repeated sprint ability test considering 5 line sprints of 30 m interspersed with 30 seconds of active recovery in nonelite, outfield, young, male soccer players. Twenty-six (age, 14.9 ± 1.2 years; height, 1.72 ± 0.12 cm; body mass, 62.2 ± 5.1 kg) players were tested 48 hours and 7 days apart for 5 × 30-m performance over 5 trials (T1–T5). Short-term (T1–T2) and long-term (T1–T3–T4–T5) reliabilities were assessed with intraclass correlation coefficient (ICC) and with typical error for measurement (TEM). Short- and long-term reliability ICCs and TEMs for total sprint time and best sprint performance were nearly perfect and satisfactory, respectively. Usefulness (as smallest worthwhile change and TEM ratio) resulted acceptable (i.e., = 1) and good (i.e., >1) for total sprint time and best sprint performance, respectively. The present study revealed that the 5 × 30-m sprint test is a reliable field test in short and long terms when the sum of sprint times and the best sprint performance are considered as outcome variables. Sprint performance decrements variables showed large variability across trials.

KEY WORDS association football, talent detection, anaerobic fitness, team sports, intermittent high-intensity exercise

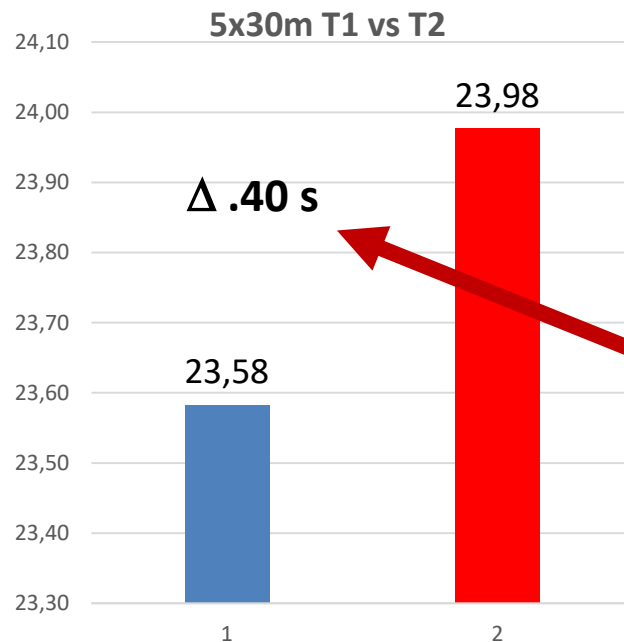
INTRODUCTION

Soccer is an intermittent high-intensity team sport with players performing as much as 150–200 high-speed bouts interspersed with activities of lower intensity or rest (2). In an average competitive soccer match, sprinting accounts for 1–11% of total match time depending on the arbitrary speed thresholds considered for detecting sprint performance (5). Additionally, players are reported to perform 1,000–1,400 changes of activity at different speeds with turns and changes of directions according to match progress (32). Indeed, during a soccer match, players may sprint with change of direction to gain ball possession or better positioning (28). However, a recent study showed that line sprints led more frequently to a scored goal than other match activities performed with different speeds and exercise modes (i.e., heading, turning, change of direction, etc.) (12).

Match analysis using the arbitrary speed thresholds method has reported sprint distances in the range of 15–20 m during a competitive match (32). However, this method does not consider the acceleration phases that lead the run into the chosen sprint speed threshold category and may therefore underestimate the actual sprint bout distance covered by players during the match (21). Given this, longer than usually reported sprint bouts should be considered, with 30 m suggested as a relevant paradigm to test line-sprint performance in soccer (6,11,32).

The ability to perform repeat sprint bouts with short recovery time (repeated sprint ability, RSA) was reported to be relevant for soccer performance and worth being

Ripetibilità Assoluta



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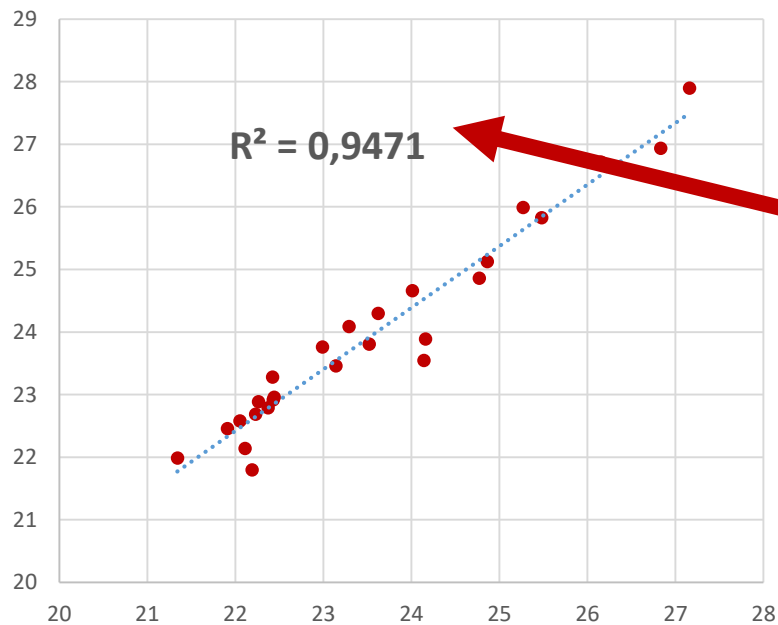
Paired samples t-test		
Sample 1	T1	
Sample 2	T2	
	Sample 1	Sample 2
Sample size	26	26
Arithmetic mean	23,5823	23,9765
95% CI for the mean	22,9350 to 24,2296	23,3222 to 24,6308
Variance	2,5683	2,6241
Standard deviation	1,6026	1,6199
Standard error of the mean	0,3143	0,3177
Paired samples t-test		
Mean difference	0,3942	
Standard deviation of mean difference	0,3734	
Standard error of mean difference	0,07322	
95% CI	0,2434 to 0,5450	
Test statistic t	5,38	
Degrees of Freedom (DF)	25	
Two-tailed probability	P < 0,0001	

¹FCR, Cerveriano, Italy;
²Phisics, University of Southern Santa Catarina, Florianópolis, Brazil;
³DES, University Institute of

Intense high-intensity team sport training as much as 150-200 high-intensity bursts per match. In an average competitive soccer match, players spend 1-11% of total match time in high-speed thresholds considered for sprinting (5). Additionally, players are exposed to 1,400 changes of activity at different directions according to the game. During a soccer match, players are required to gain ball possession or defend a goal. A recent study showed that only a small number of players (12%) are able to reach a speed threshold category and maintain it for the duration of the match (21). Given this, longer sprint bouts should be considered, relevant paradigm to test lineal speed (6,11,32). Repeat sprint bouts with short rest periods (RSA) was reported to be a valid performance and worth being

Ripetibilità Relativa

Correlazione T1-T2 5x30m



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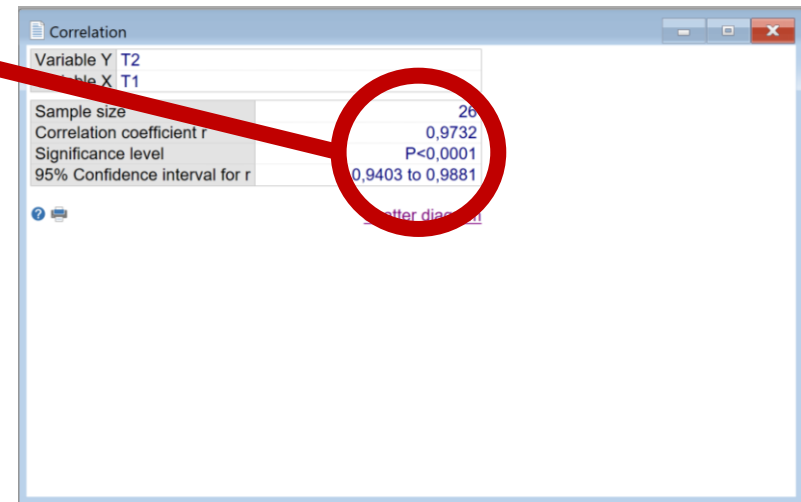
¹Fitness Training and Biomechanics Laboratory, Italian Football Federation, Technical Department, Coverciano, Italy;

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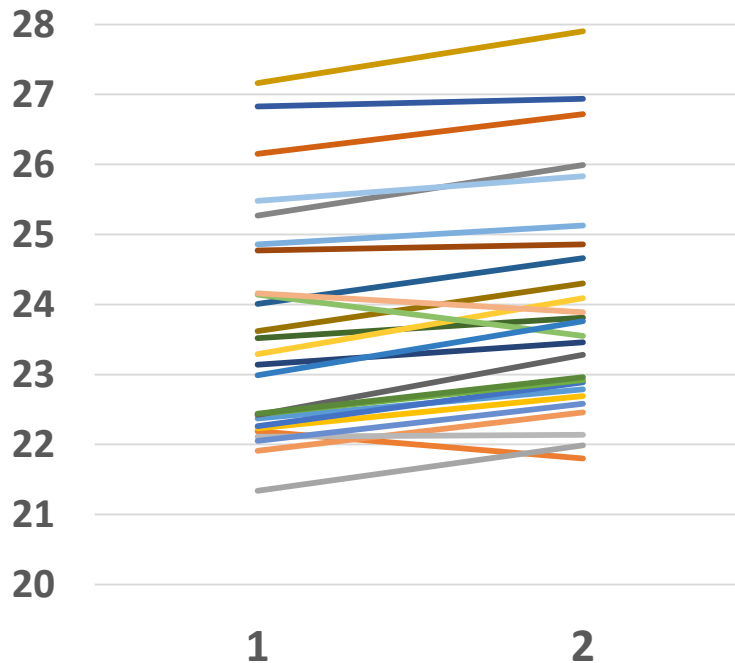
Brazil; and ⁵Research Center in Sports Sciences, Health Sciences and Human Development, CIDESD, University Institute of

Maia, ISMAI, Maia, Portugal



Ripetibilità Relativa

Variazioni individuali 5x30m



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ABSTRACT

Castagna, C, Lorenzo, F, Krstrup, P, Fernandes-da-Silva, J, Póvoas, SCA, Bernardini, A, and D'Ottavio, S. Reliability characteristics and applicability of a repeated sprint ability test in young male soccer players. *J Strength Cond Res* 32(6): 1538–1544, 2018—The aim of this study was to examine the usefulness and reliability characteristics of a repeated sprint ability test considering 5 line sprints of 30 m interspersed with 30 seconds of active recovery in nonelite, outfield, young, male soccer players. Twenty-six (age, 14.9 ± 1.2 years; height, 1.72 ± 0.12 cm; body mass, 62.2 ± 5.1 kg) players were tested 48 hours and 7 days apart for 5×30 -m performance over 5 trials (T1–T5). Short-term (T1–T2) and long-term (T1–T3–T4–T5) reliabilities were assessed with intraclass correlation coefficient (ICC) and with typical error for measurement (TEM). Short- and long-term reliability ICCs and TEMs for total sprint time and best sprint performance were nearly perfect and satisfactory, respectively. Usefulness (as smallest worthwhile change and TEM ratio) resulted acceptable (i.e., = 1) and good (i.e., >1) for total sprint time and best sprint performance, respectively. The present study revealed that the 5×30 -m sprint test is a reliable field test in short and long terms when the sum of sprint times and the best sprint performance are considered as outcome variables. Sprint performance decrements variables showed large variability across trials.

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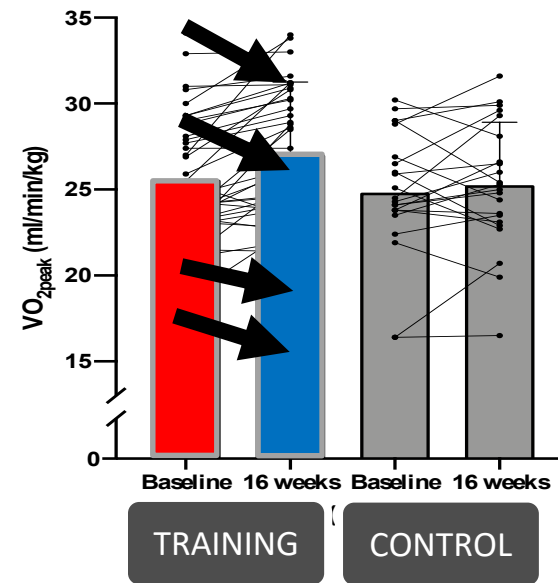
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Teoria delle Misure



INDIVIDUALITA'



Determinazione del SEGNALE del test

RELIABILITY CHARACTERISTICS OF A REPEATED SPRINT ABILITY TEST IN YOUNG MALE SOCCER PLAYERS

APPLICABILITY

CARLO CASTAGNA,^{1,2} FRANCINI LORENZO,¹ PETER KRUSTRUP,³ JULIANO FERNANDES-DA-SILVA,⁴
SUSANA C.A. PÓVOAS,⁵ ANDREA BERNARDINI,² AND STEFANO D'OTTAVIO²

¹Fitness Training and Biomechanics Laboratory, Italian Football Federation, Technical Department, Coceriano, Italy;
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Teoria delle Misure

Minimo Cambiamento Utile

MCU= DS x 0,20

Errore Tipico della Misura

TEM= DS diff/v2

$$\text{Signal-to-Noise} = \frac{MCU}{TEM}$$

RELIABILITY CHARACTERISTICS AND APPLICABILITY OF A REPEATED SPRINT ABILITY TEST IN YOUNG MALE SOCCER PLAYERS

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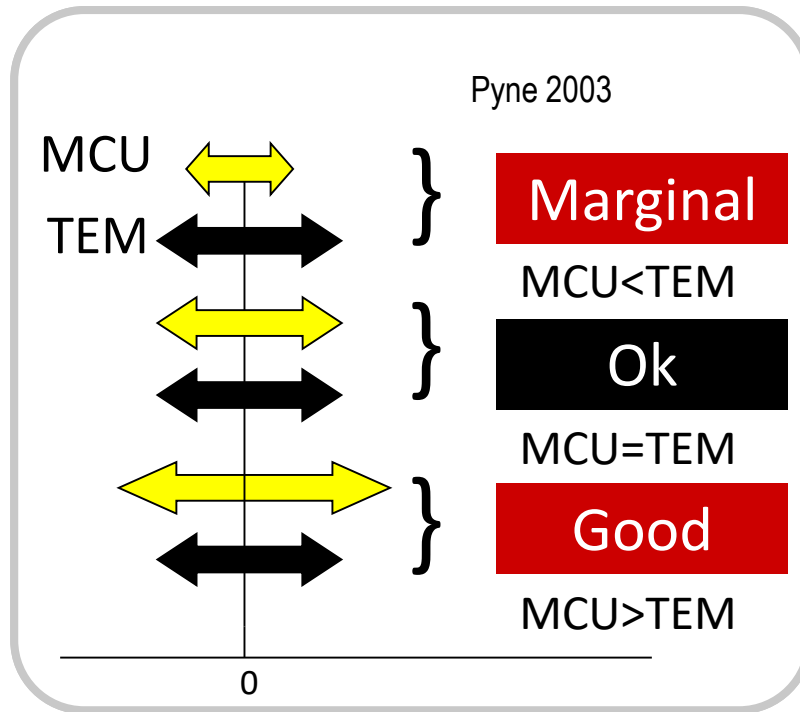
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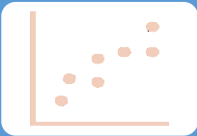
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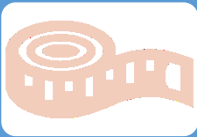
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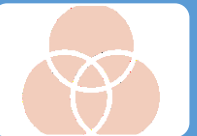
TAKE HOME MESSAGES



Ripetibilità Relativa!!!



Ripetibilità di Campione



Affidabilità Strumento



Minimo Cambiamento

DETERMINARE LA VALIDITA'

Yo-Yo intermittent tests are a valid tool for aerobic fitness assessment in recreational football

Carlo Castagna, Peter Krstrup & Susana Póvoas

European Journal of Applied Physiology

ISSN 1439-6319

Eur J Appl Physiol
DOI 10.1007/s00421-019-04258-8



	YYIE1	YYIE2	YYIR1
Pearson r	0.82*** (0.66–0.91)	0.81*** (0.63–0.90)	0.76*** (0.55–0.88)
Intercept	32.1 (28.4–35.7)	31.3 (27.2–35.3)	33.8 (29.9–37.7)
Slope	0.006 (0.005–0.008)	0.020 (0.015–0.026)	0.012 (0.008–0.016)
TEE (ml kg ⁻¹ min ⁻¹)	3.3 (2.6–4.4)	3.4 (2.7–4.6)	3.8 (3.0–5.1)
TEE (standardized)	0.6 (0.5–0.8)	0.6 (0.5–0.8)	0.7 (0.5–0.9)
TEE as CV%	7.9 (6.2–10.8)	7.8 (6.2–10.7)	8.8 (6.9–12.0)

TEE typical error of estimate, CV coefficient of variation, YYIE1 Yo-Yo intermittent endurance test level 1, YYIE2 Yo-Yo intermittent endurance test level 2, YYIR1 Yo-Yo intermittent recovery test level 1

*** $P < 0.0001$; (95%CI)

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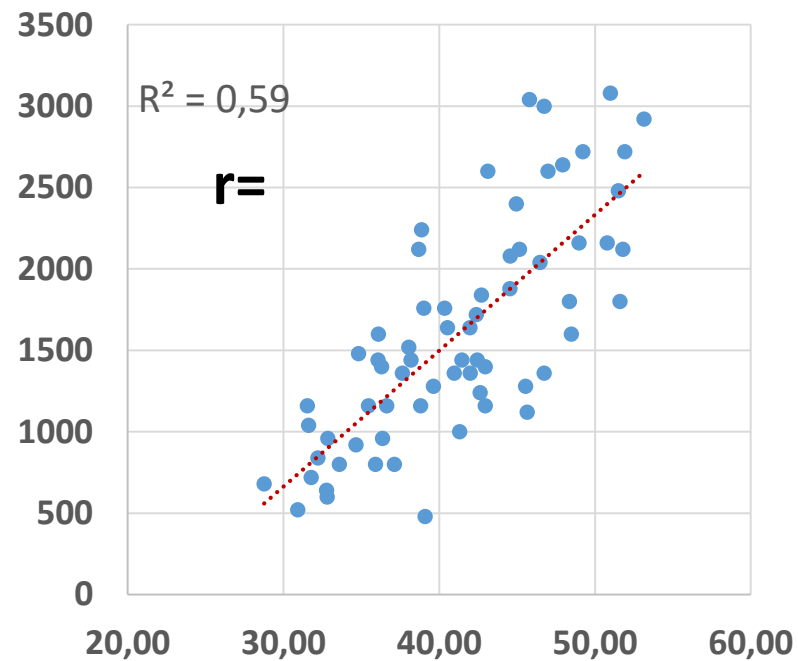
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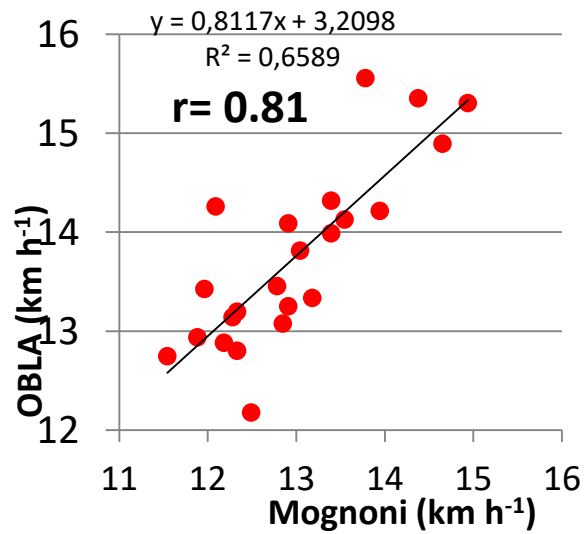


YYIE1 vs VO₂max



DETERMINARE LA VALIDITA'

Coefficiente di Correlazione (r)



Castagna et al 2014



A bit of Review

● A New Approach to Monitoring Exercise Training

CARL FOSTER, JESSICA A. FLORHAUG, JODI FRANKLIN,
LORI GOTTSCHALL, LAURI A. HROVATIN, SUZANNE PARKER,
PAMELA DOLESHAL, AND CHRISTOPHER DODGE

Department of Exercise and Sport Science, University of Wisconsin–La Crosse, Wisconsin 54601.

● Use of RPE-Based Training Load in Soccer

FRANCO M. IMPELLIZZERI¹, ERMANNO RAMPININI¹, AARON J. COUTTS²,
ALDO SASSI¹, and SAMUELE M. MARCORA³

¹Human Performance Lab, S.S. MAPEI, Castellanza, Varese, ITALY; ²School of Leisure, Sport and Tourism, University of Technology, Sydney, AUSTRALIA; and ³School of Sport, Health, and Exercise Sciences, University of Wales-Bangor, UNITED KINGDOM

● Heart rate and blood lactate correlates of perceived exertion during small-sided soccer games

Aaron J. Coutts^{a,*}, Ermanno Rampinini^b, Samuele M. Marcora^c,
Carlo Castagna^d, Franco M. Impellizzeri^b



Monitoring the athlete training response: subjective self-reported measures trump commonly used objective measures: a systematic review

Anna E Saw,¹ Luana C Main,² Paul B Gatin¹



MINI REVIEW
published: 02 November 2017
doi: 10.3389/fnins.2017.00612



Session-RPE Method for Training Load Monitoring: Validity, Ecological Usefulness, and Influencing Factors

Monoem Haddad^{1*}, Georgios Stylianides², Leo Djaoui³, Alexandre Dellal⁴ and Karim Chamari⁵

¹ Sport Science Program, College of Arts and Sciences, Qatar University, Doha, Qatar, ² Exercise Science Program, Health Professions, Lebanon Valley College, Annville, PA, United States, ³ Inter-University Laboratory of Human Movement Biology, University of Lyon, University Claude Bernard Lyon1, Lyon, France, ⁴ FIFA Medical Centre of Excellence, Centre Orthopédique Santy, Lyon, France, ⁵ Athlete Health and Performance Research Centre, ASPETAR, Qatar Orthopaedic and Sports Medicine Hospital, Doha, Qatar

A bit of Review

● The training—injury prevention paradox: should athletes be training smarter *and* harder?

Tim J Gabbett^{1,2}

● **ELITE JUNIOR AUSTRALIAN FOOTBALL PLAYERS EXPERIENCE SIGNIFICANTLY DIFFERENT LOADS ACROSS LEVELS OF COMPETITION AND TRAINING MODES**

TIMOTHY J.H. LATHLEAN,¹ PAUL B. GASTIN,² STUART NEWSTEAD,¹ AND CAROLINE F. FINCH^{3,4}

¹Monash University Accident Research Center, Monash University, Clayton, Australia; ²Center for Sports Research, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Australia; ³Australian Center for Research Into Sports and Its Prevention, Federation University Australia, Ballarat, Australia; and ⁴Edith Cowan University, Perth, Australia

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VOL. 34, NO. 24, 2189–2194
<http://dx.doi.org/10.1080/02640414.2016.1171891>

 **Routledge**
Taylor & Francis Group

● **Effects of tapering on physical match activities in professional soccer players**

Mohamed Saifeddin Fessi^a, Nidhal Zarrouk^b, Valter Di Salvo^{c,d}, Cristoforo Filetti^e, Alan R. Barker^f and Wassim Moalla^a

^aUR 15JS01 EM2S, Education, Motricity, Sport and Health, High Institute of Sport and Physical Education, University of Sfax, Sfax, Tunisia; ^bNational Sports Medicine Programme (NSMP), Excellence in Football Project, Aspetar, Orthopaedic and Sports Medicine Hospital, Doha, Qatar; ^cFootball Performance & Science Department, Aspire Academy, Doha, Qatar; ^dDepartment of Movement, Human and Health Sciences, University of Rome Foro Italico, Roma, Italy; ^eDepartment of Sports Science and Exercise, University of Rome Torvergata, Roma, Italy; ^fSports and Health Sciences, College of Life and Environmental Sciences, University of Exeter, England, UK