



## COMITATO XV ZONA FIV

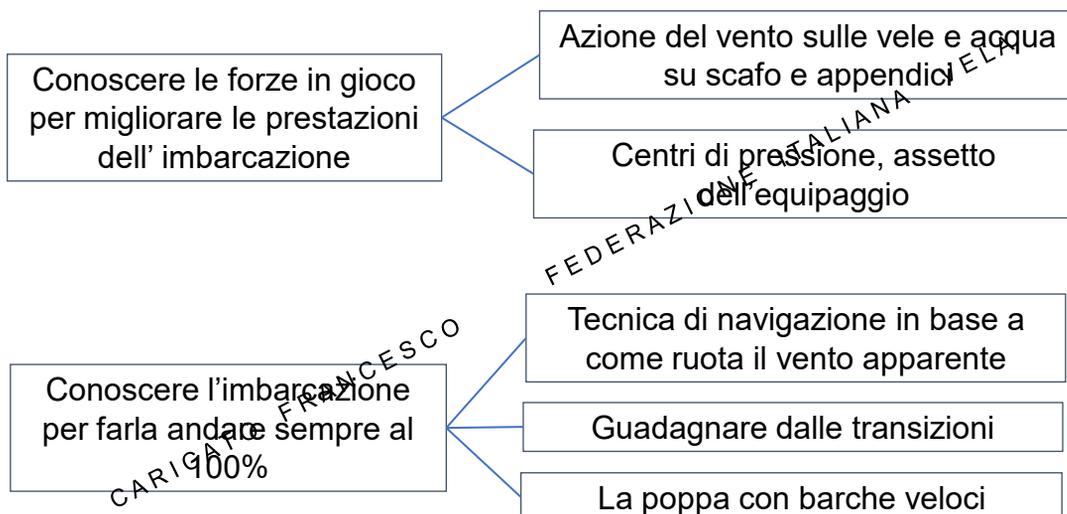
FORMAZIONE ISTRUTTORI E UdR

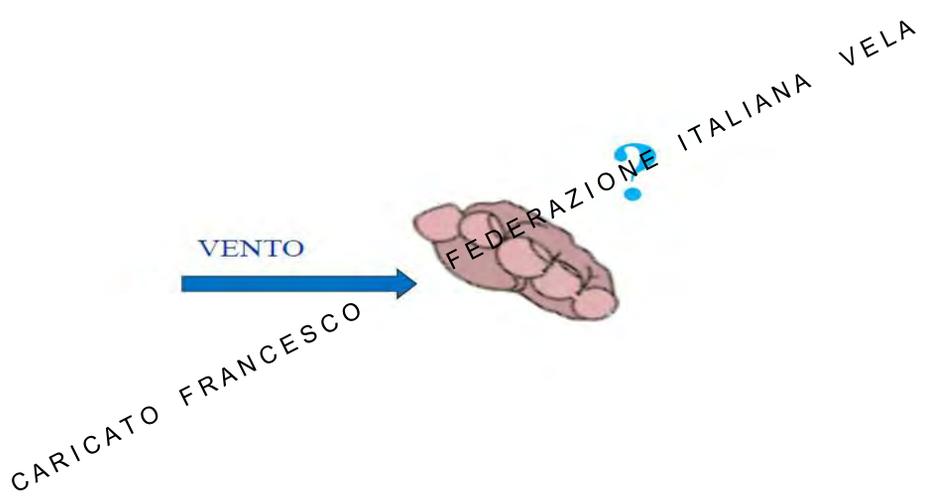
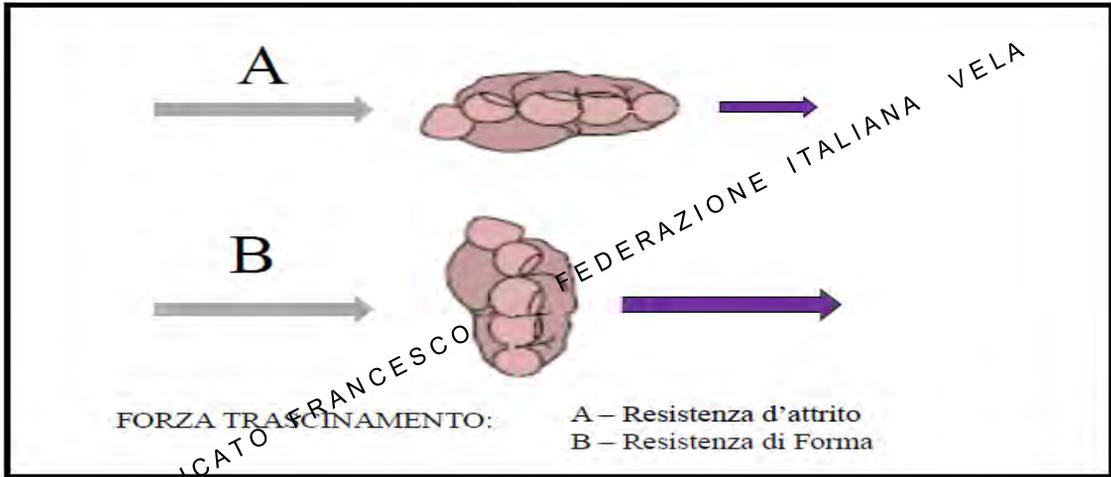
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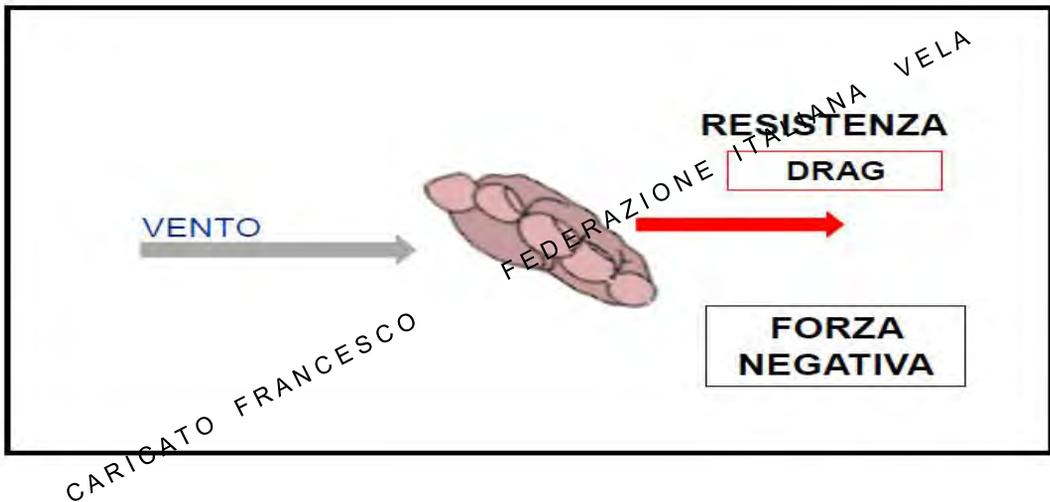
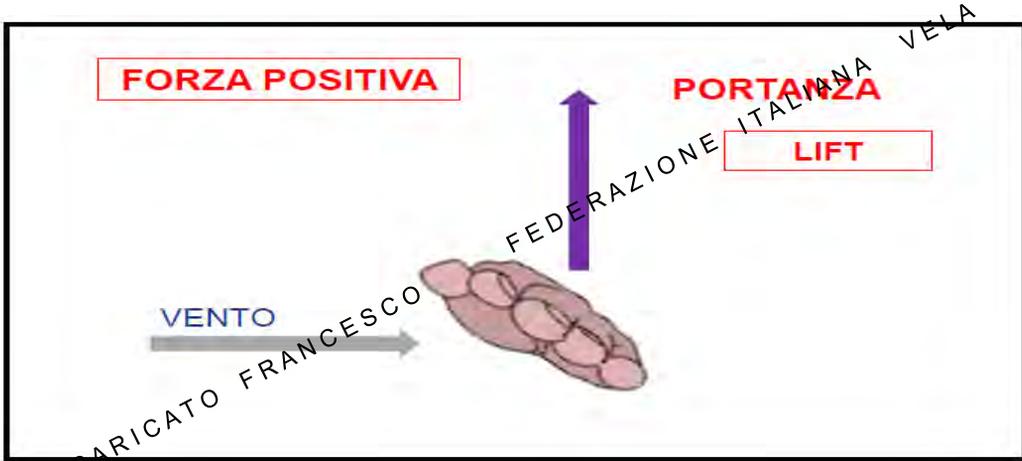
Peculiarità e tecniche di conduzione

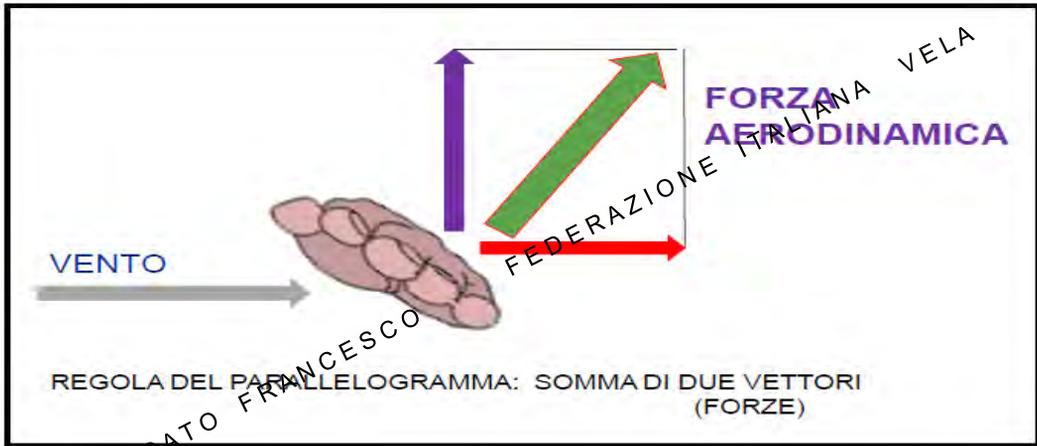
Malgrate (LC) – 4 marzo 2022

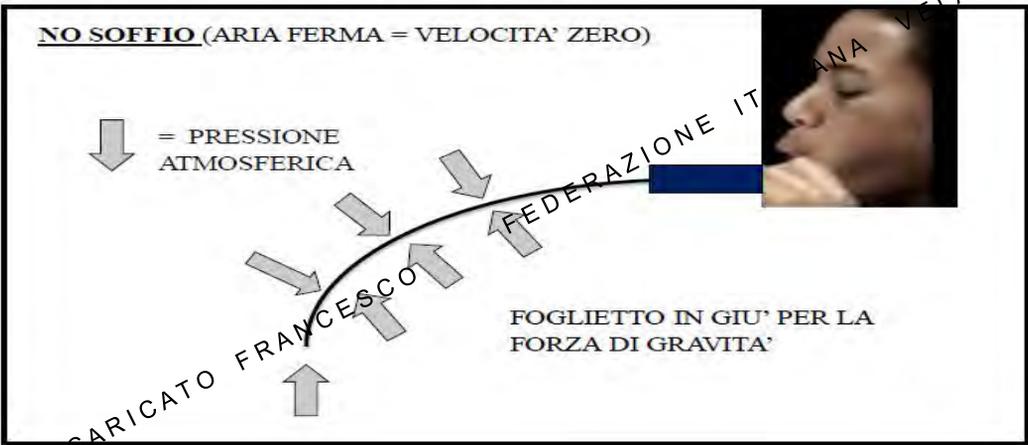
#### UN BRAVO REGATANTE DEVE:











SI SOFFIO (ARIA SCORRE PARTE SUPERIORE = VELOCITA' DIVERSA DA ZERO)

**BERNULLI**

**+ VELOCITA' = - PRESSIONE**

The diagram illustrates Bernoulli's principle. It shows a horizontal surface with air flowing from right to left, indicated by blue arrows. Above the surface, the air streamlines are closer together, and green arrows pointing downwards represent higher pressure. Below the surface, the air streamlines are further apart, and grey arrows pointing upwards represent lower pressure. A small inset photo shows a person blowing air towards the right. A mathematical symbol  $>$  is shown between two upward-pointing arrows, indicating that the pressure is higher where the air velocity is lower.

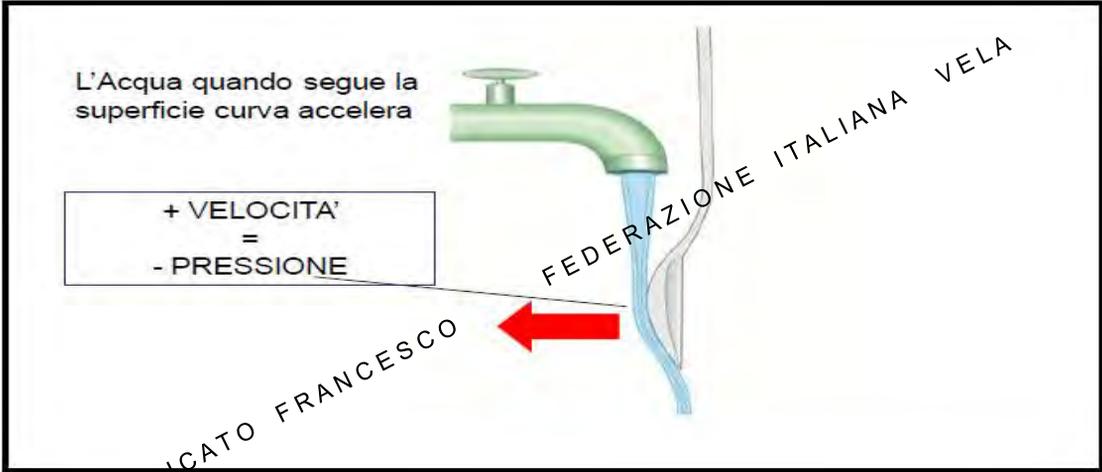
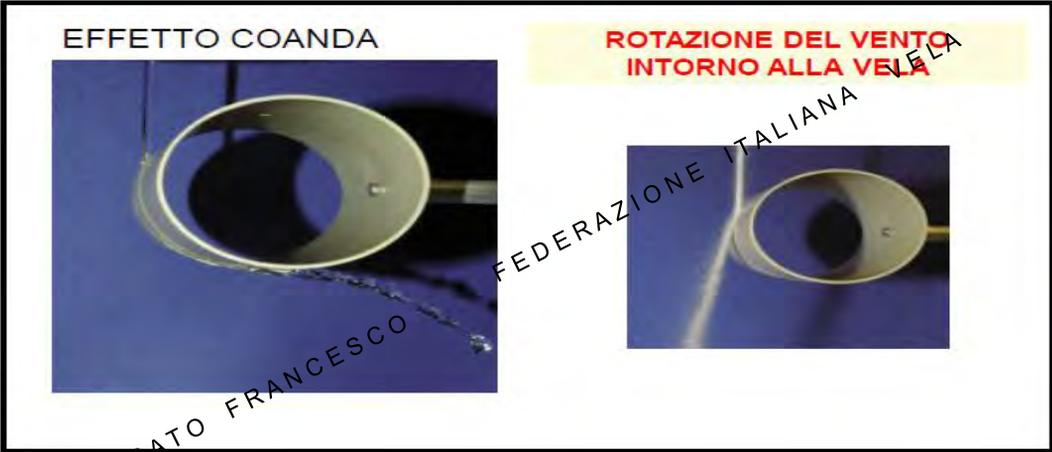
FEDERAZIONE ITALIANA VELA

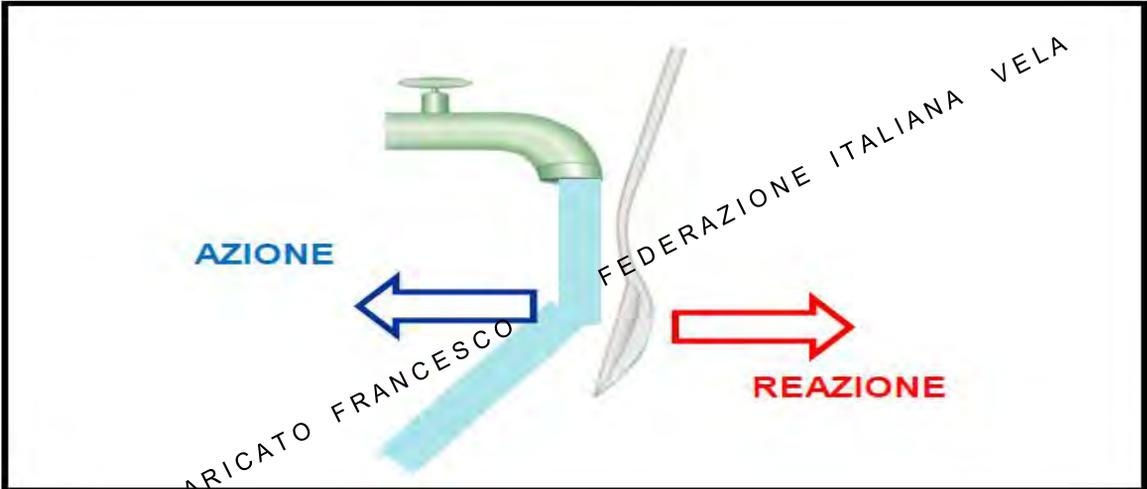
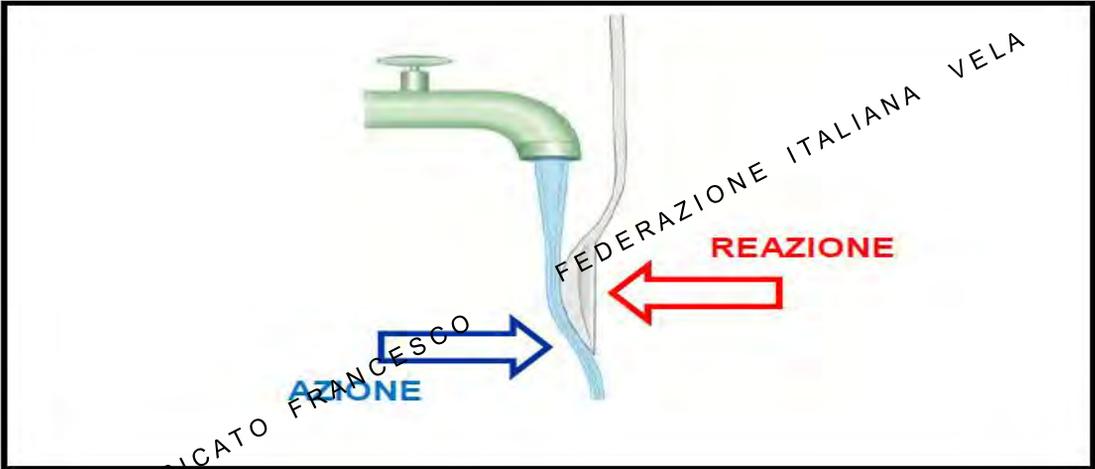
CARICATO FRANCESCO

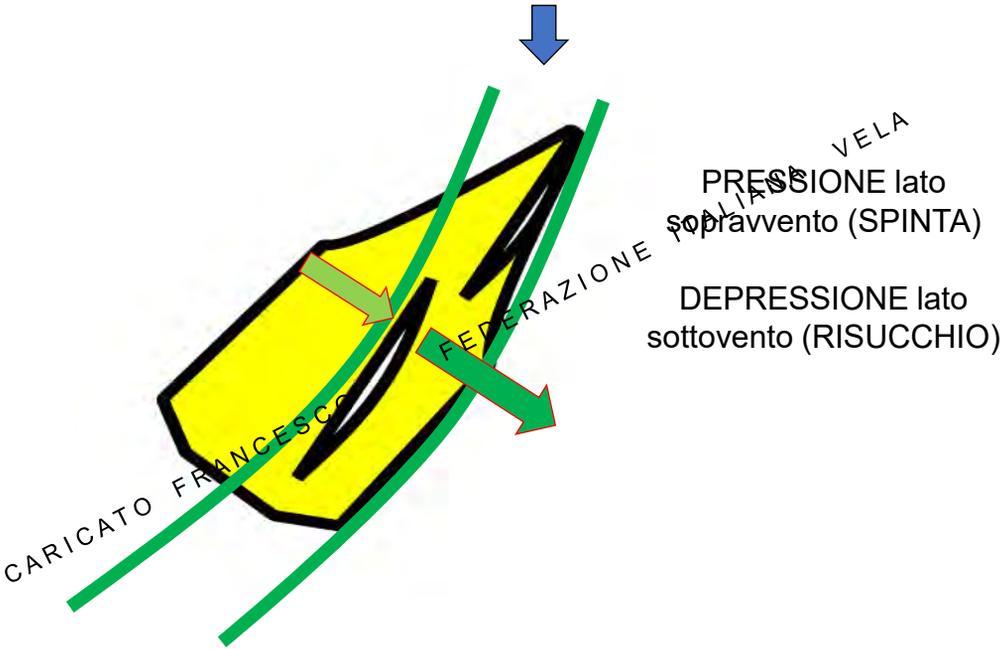
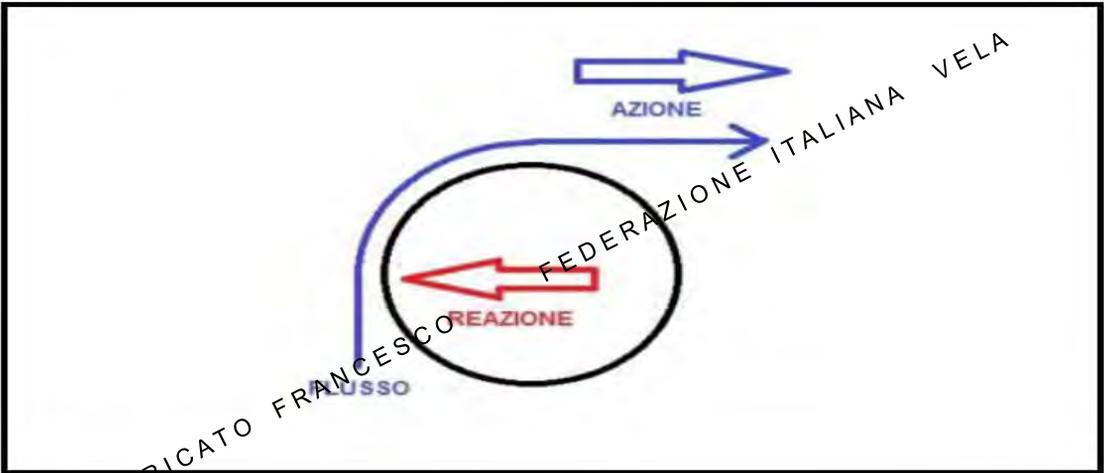
A photograph of a person's chest with a diagram overlaid. The diagram shows a sailboat's mast and sail. Red arrows point from the left towards the sail, representing wind. Green lines represent the sail's structure. A blue vertical line represents the mast. A box on the right contains the text: **+ velocità** and **- pressione**.

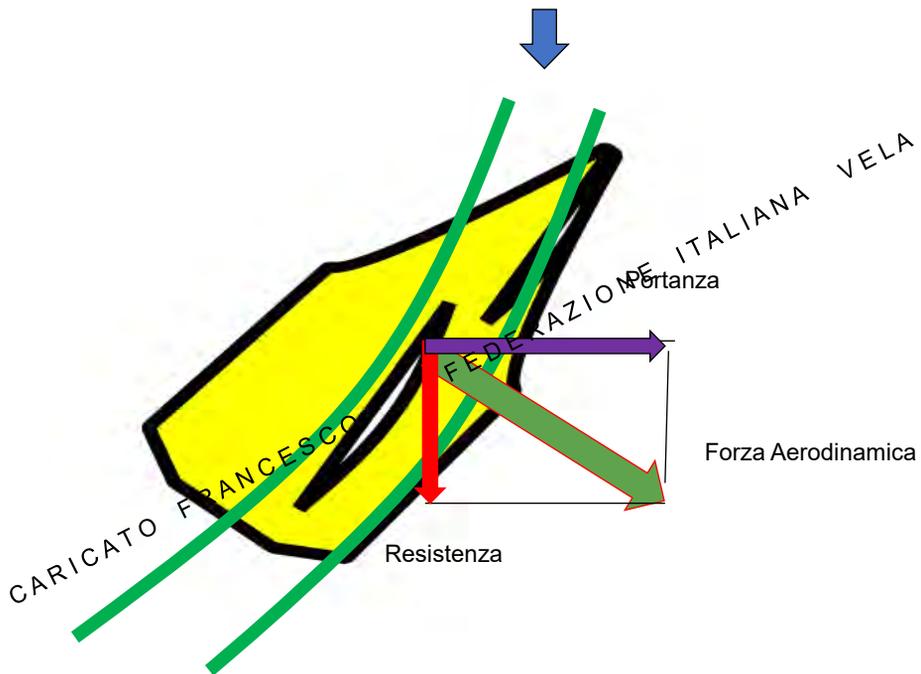
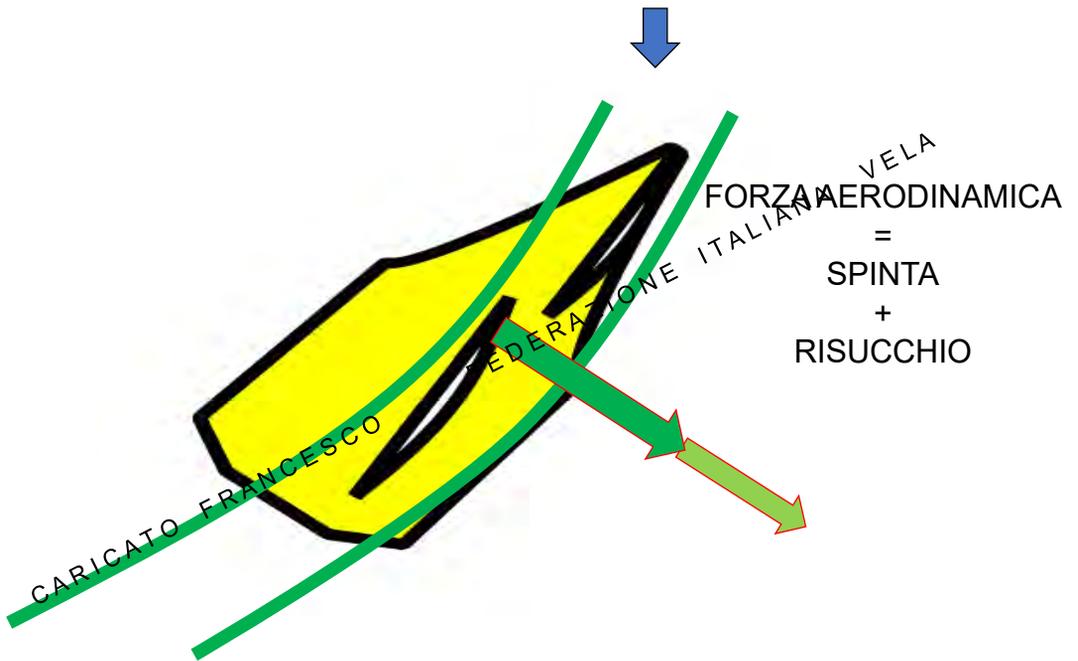
FEDERAZIONE ITALIANA VELA

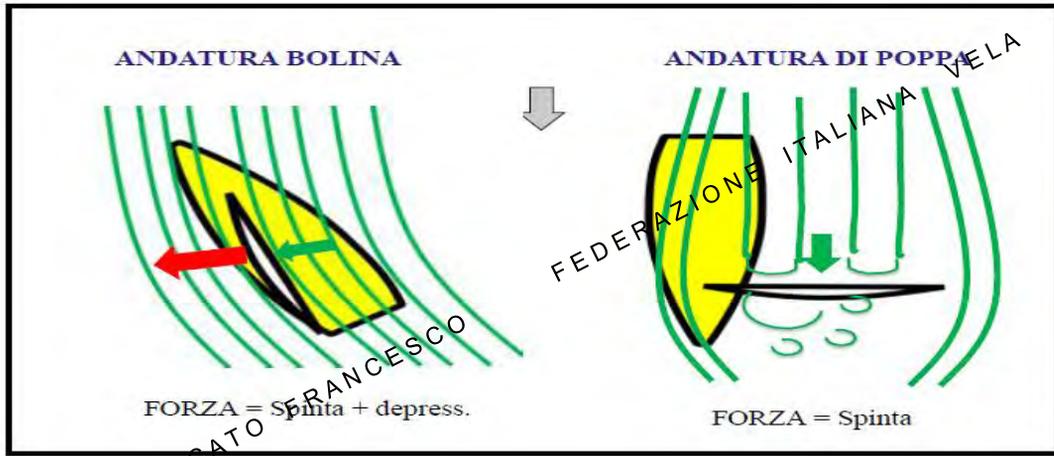
CARICATO FRANCESCO



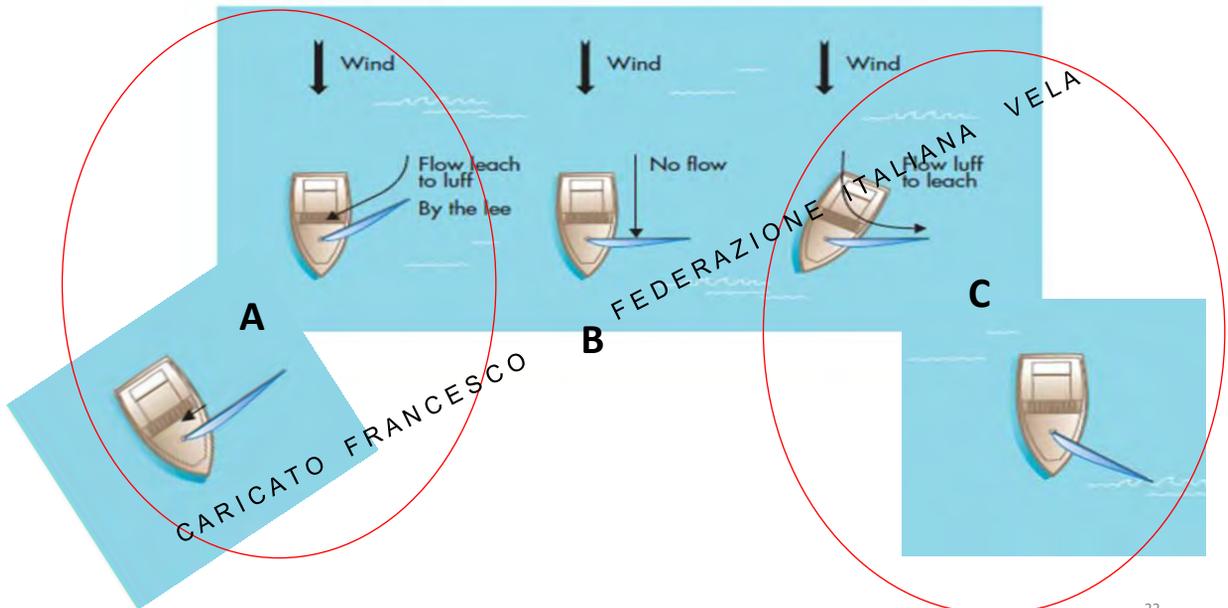


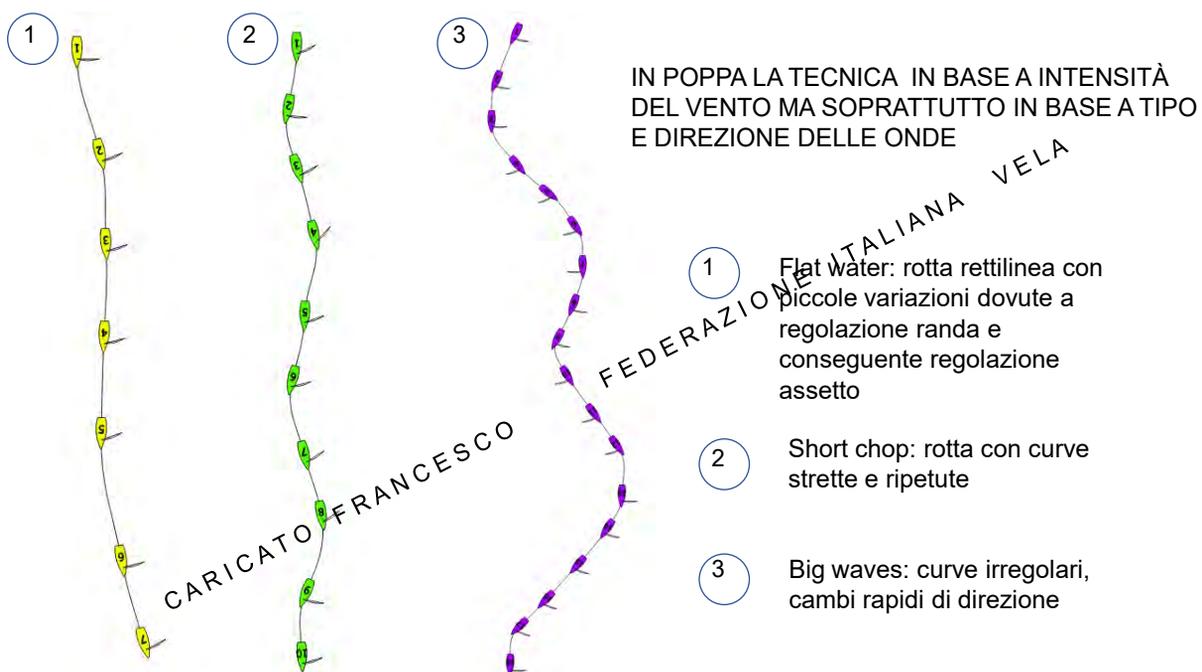






ANDATURA DI POPPA NELL'ILCA





Cazzare scotta e accompagnare timone all'orza  
- Barca sempre leggermente sbandata sottovento

Rollare lentamente sottovento

Peso si sposta sopravvento per pompare e accelerare

Aiutiamo poggiate con il timone, barca in accelerata. Occhio a balumina

Barca all'orza per accelerare

FEDERAZIONE ITALIANA VELA

CARICATO FRANCESCO

Time: 13:36  
Ham elements: 13250218

Turbulence intensity (%)  
0.000 7.500 15.000 22.500 30.000

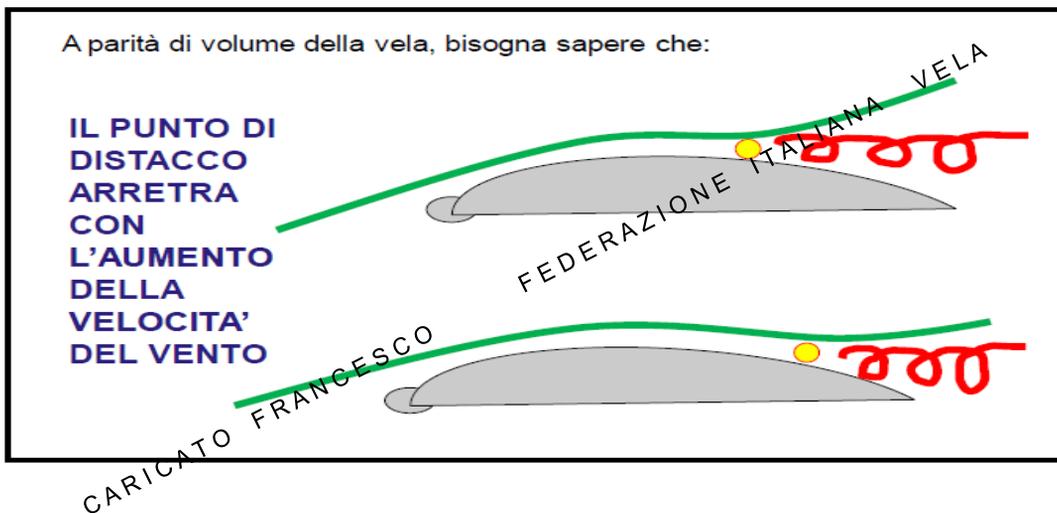
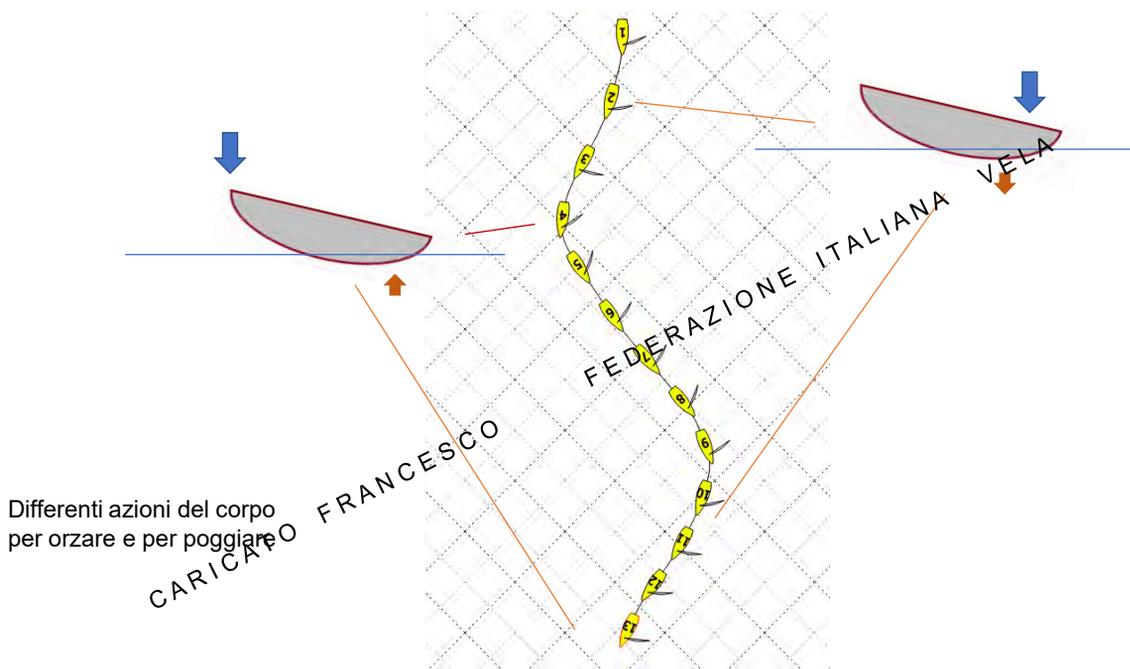
WB-Sails

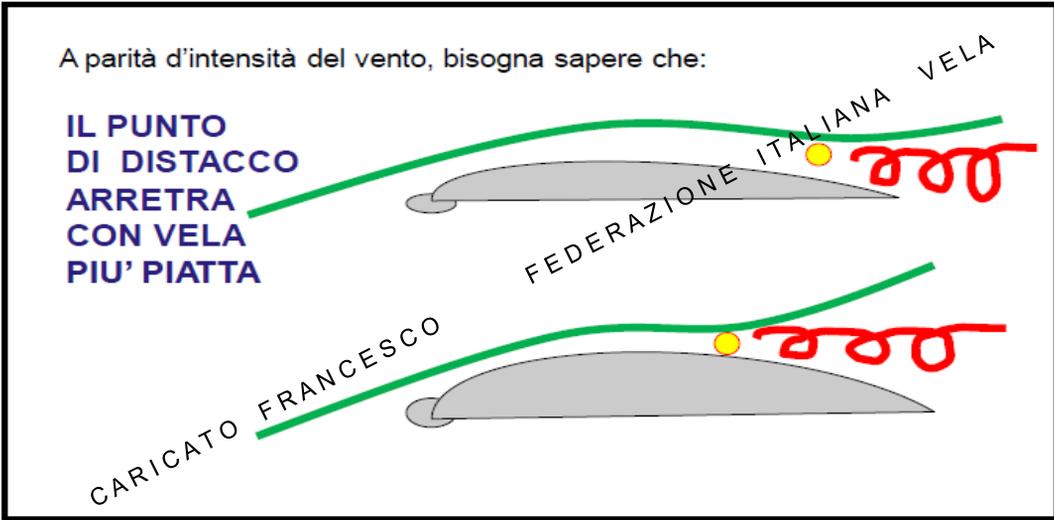
Riley Schutt, Cornell University:  
"UNSTEADY AERODYNAMICS OF SAILING MANEUVERS AND KINETIC TECHNIQUES"

Figure 3.6: An instrument array is used to capture on-the-water boat and sail motion.

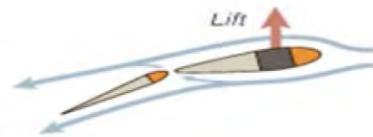
Figure 3.7: Deviation - where the centerline is pointing

OCCHIO ALLA 42

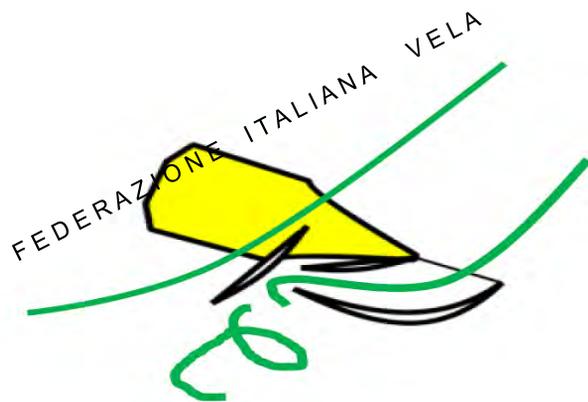




FEDERAZIONE ITALIANA VELA



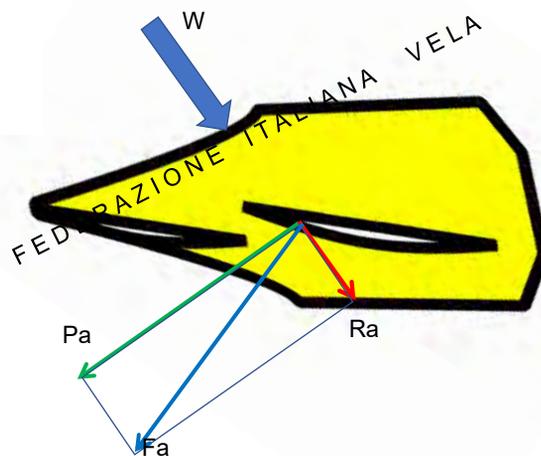
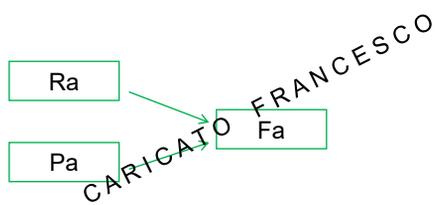
# CANALE RANDA/FIOCCO MAL REGOLATO



$R_a$  = Resistenza Aerodinamica

$P_a$  = Portanza Aerodinamica

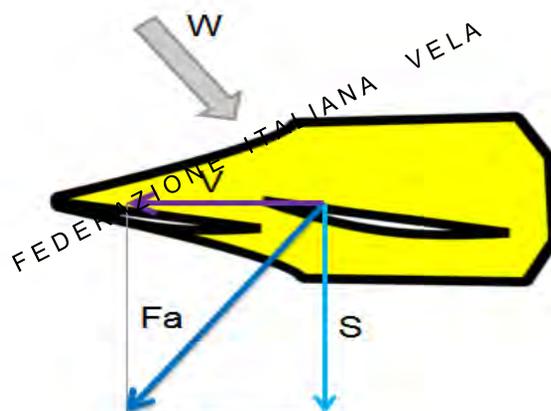
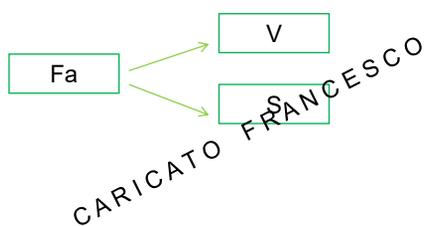
$F_a$  = Forza Velica



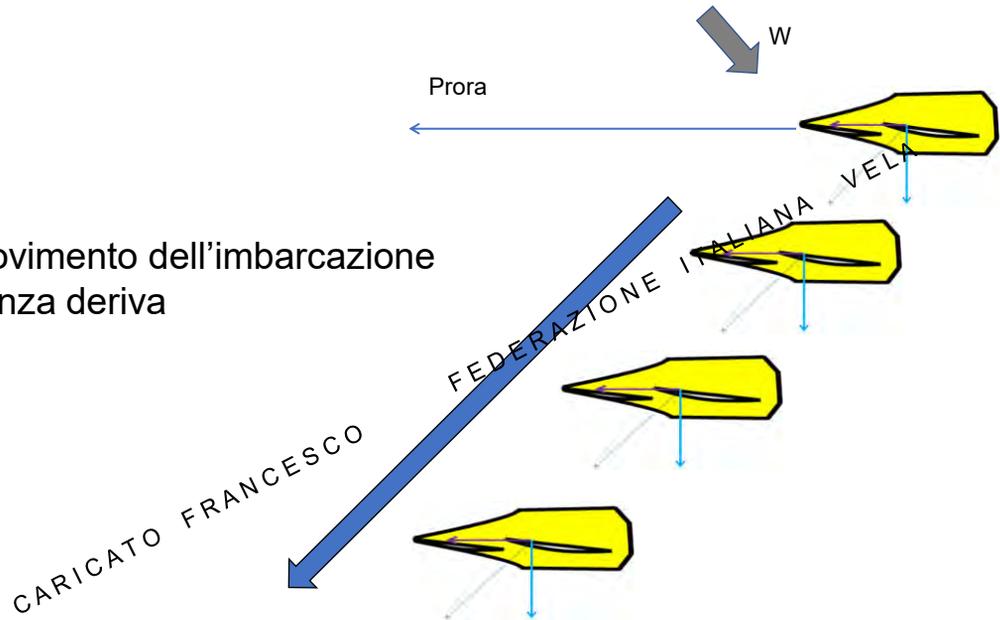
$F_a$  = Forza Velica

$V$  = Avanzamento imbarc.

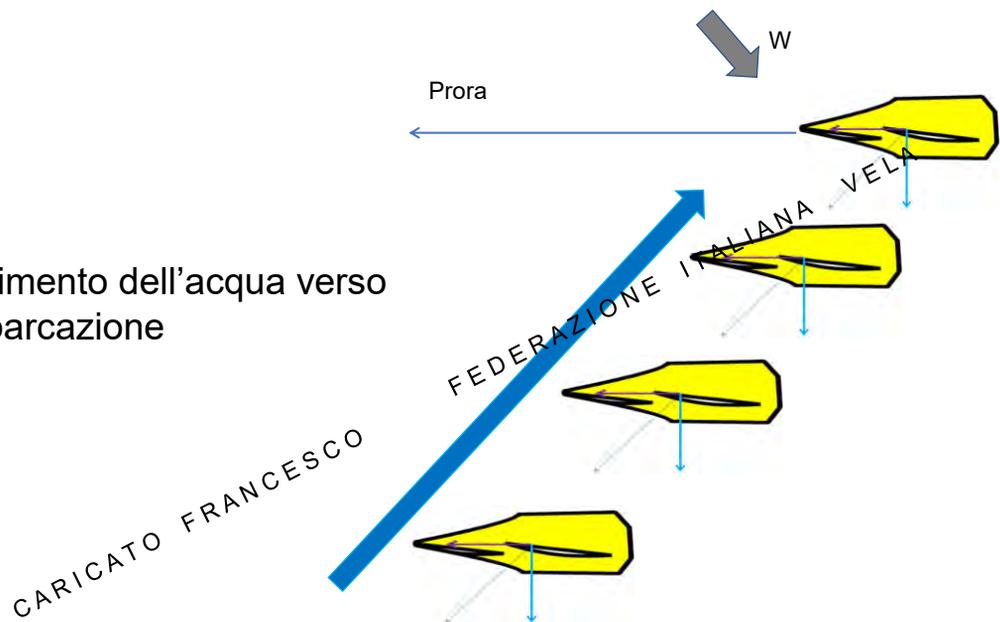
$S$  = Scarroccio imbarc.



Movimento dell'imbarcazione  
senza deriva



Movimento dell'acqua verso  
l'imbarcazione

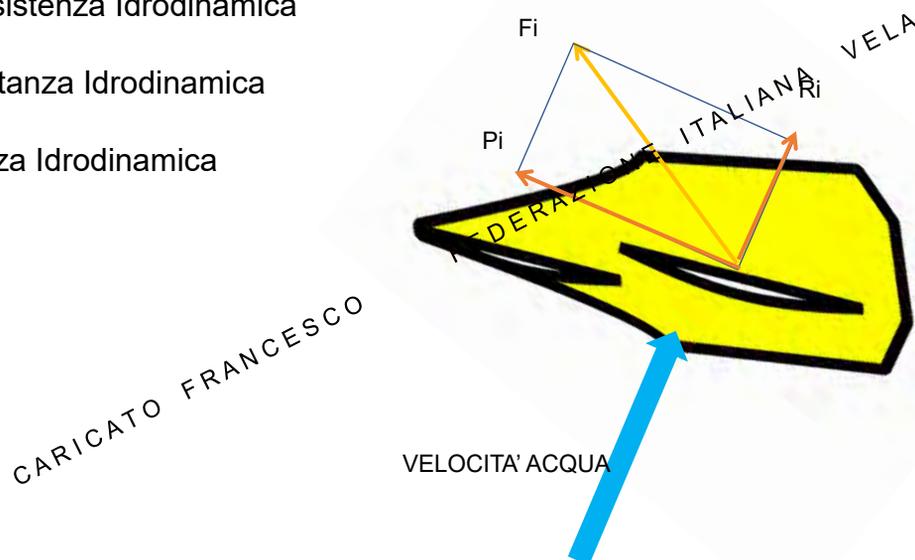


## Forze idrodinamiche

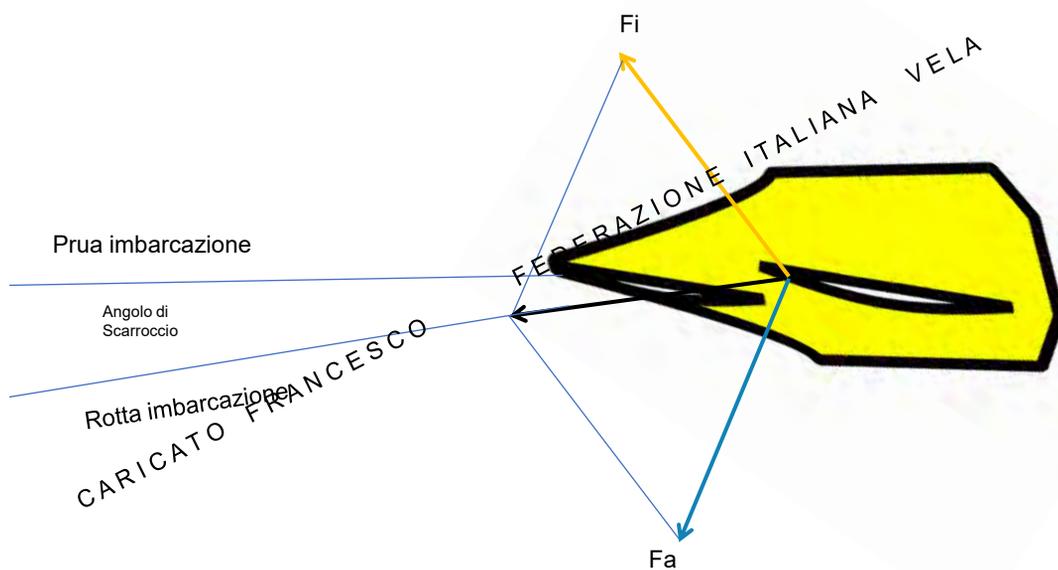
$R_i$  = Resistenza Idrodinamica

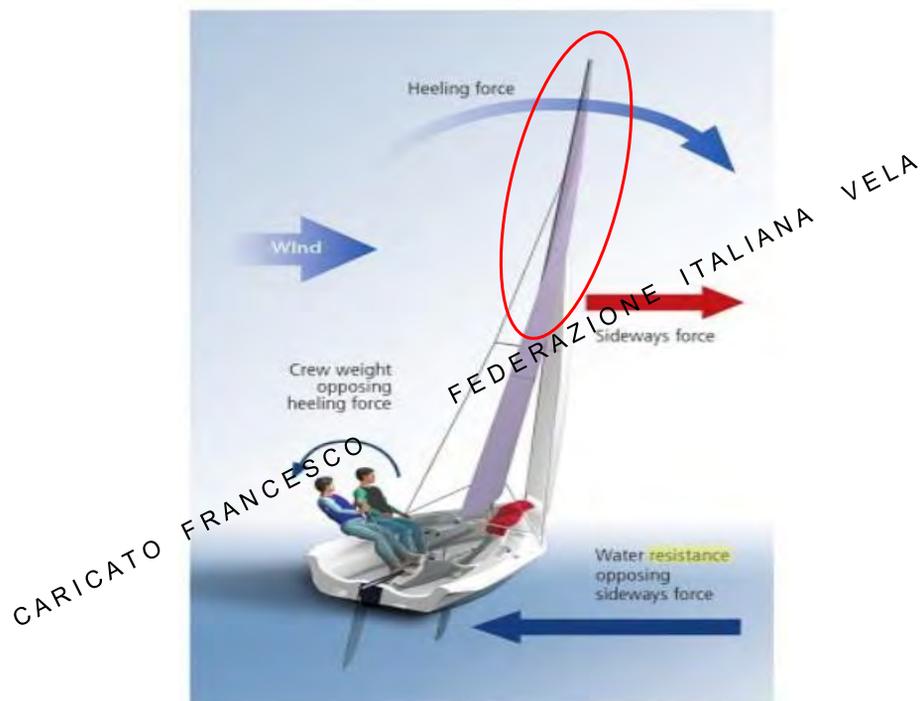
$P_i$  = Portanza Idrodinamica

$F_i$  = Forza Idrodinamica

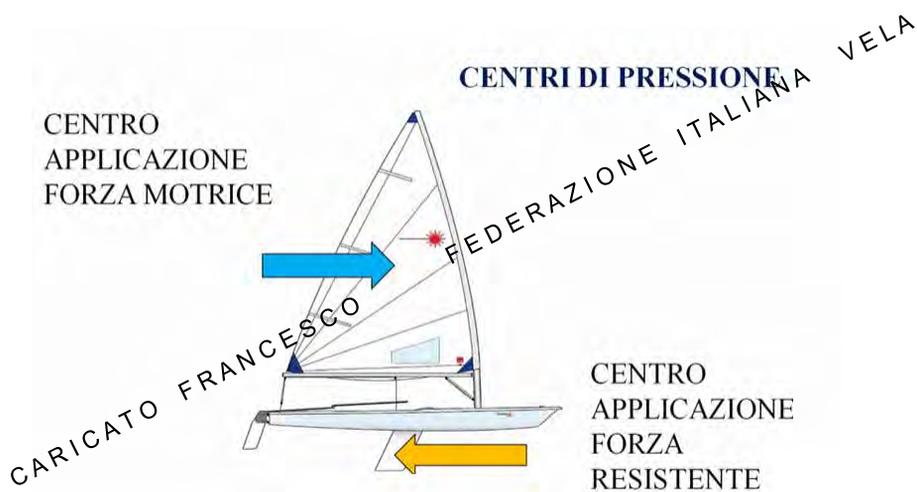


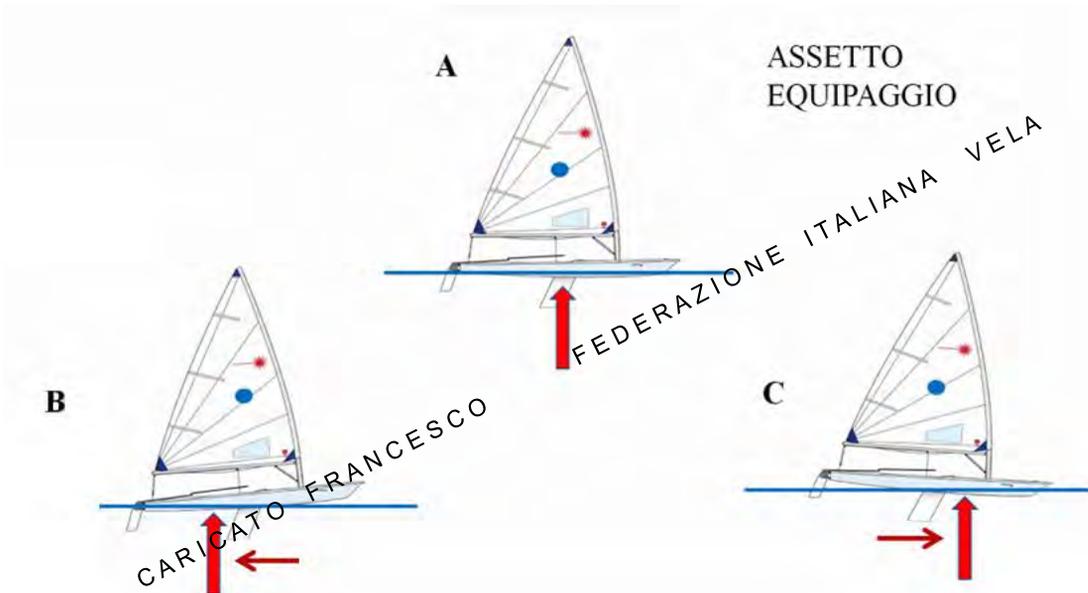
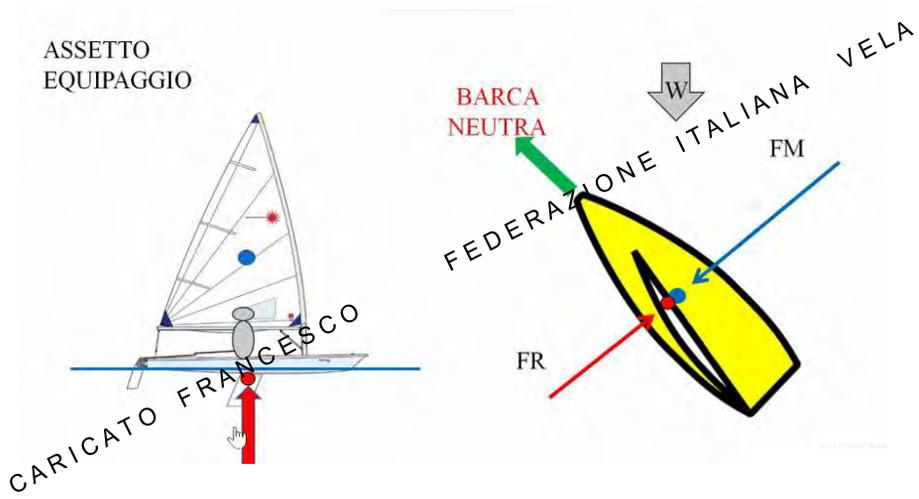
## Forze aerodinamiche e idrodinamiche

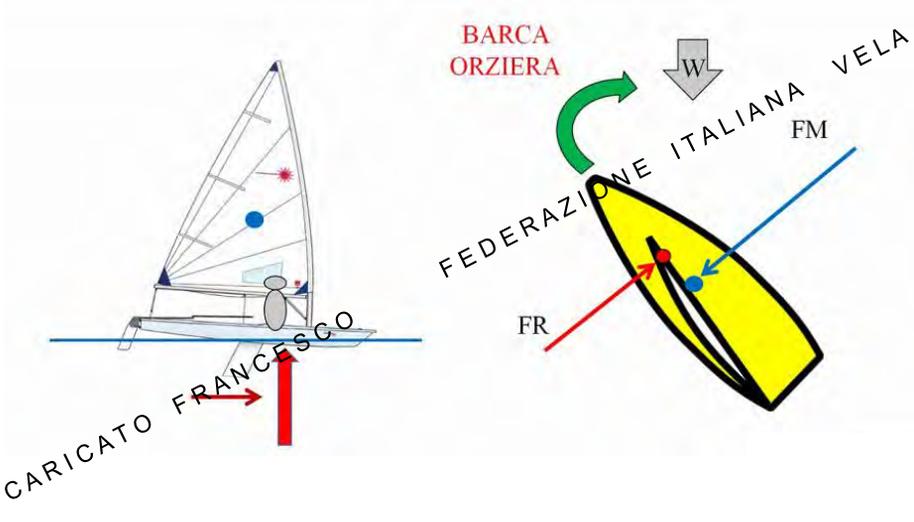
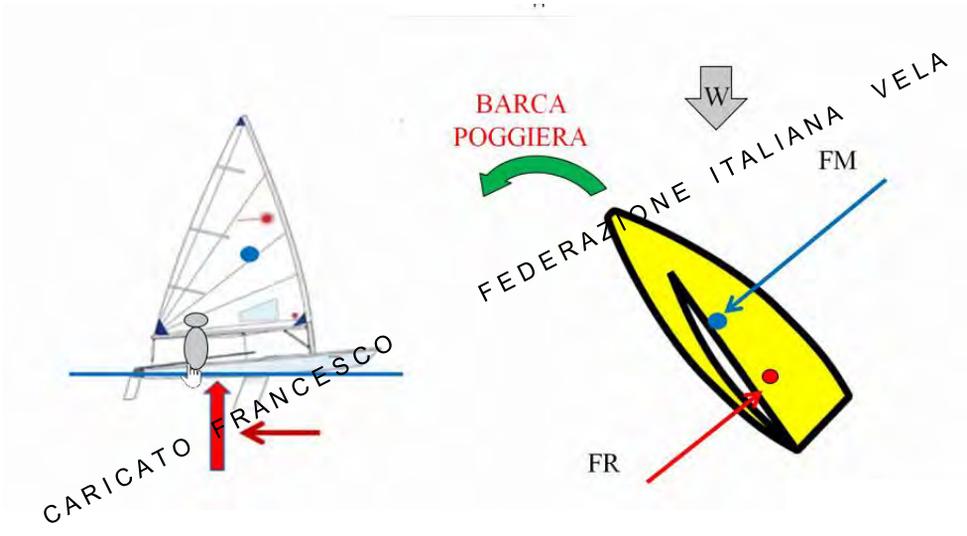


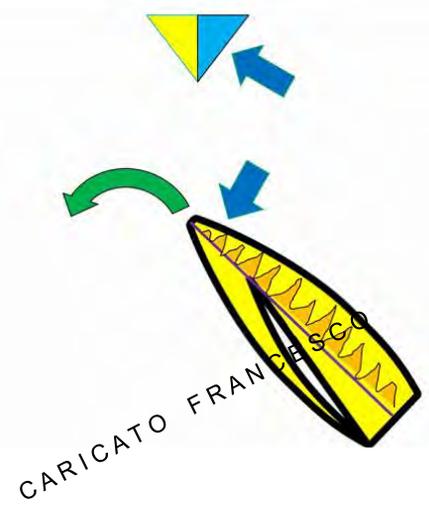


La giusta nomenclatura...





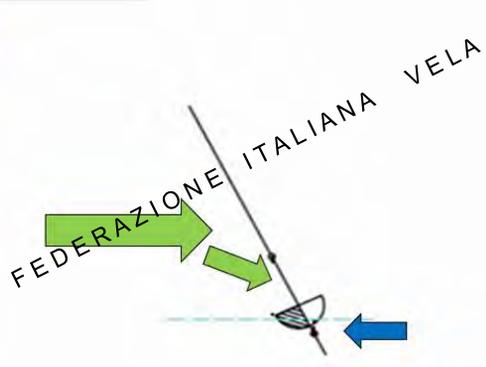
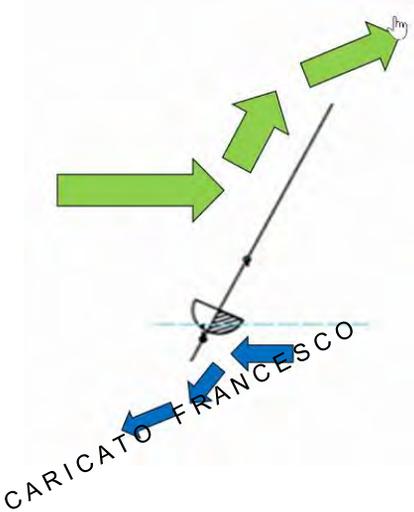


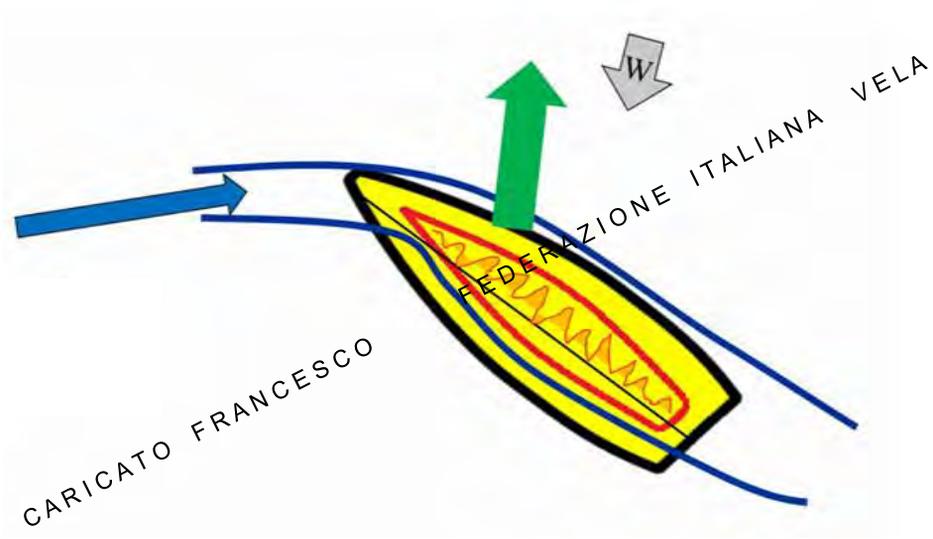


Barca sbandata sopravvento

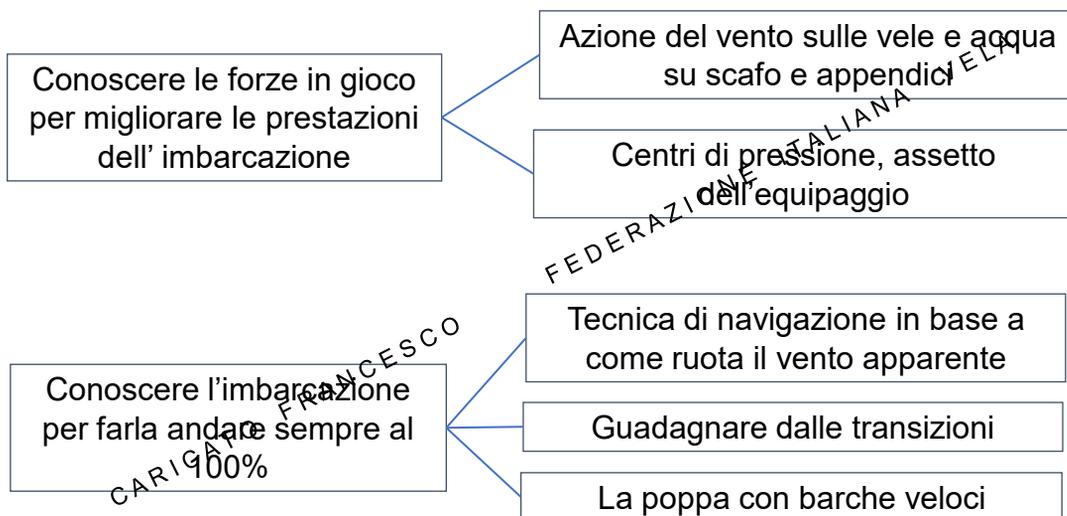


Barca sbandata sopravvento

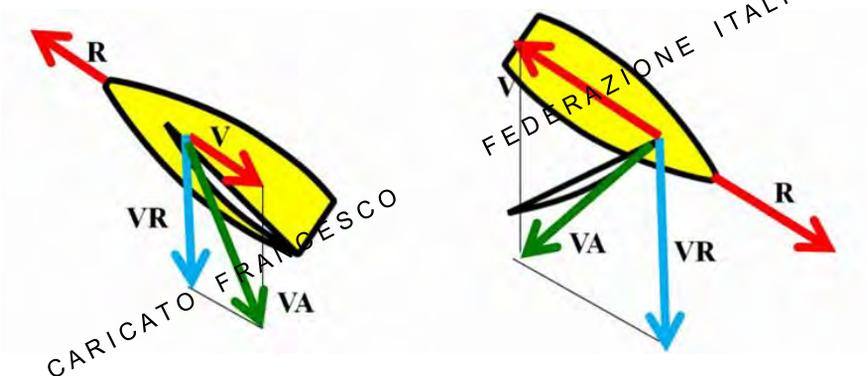




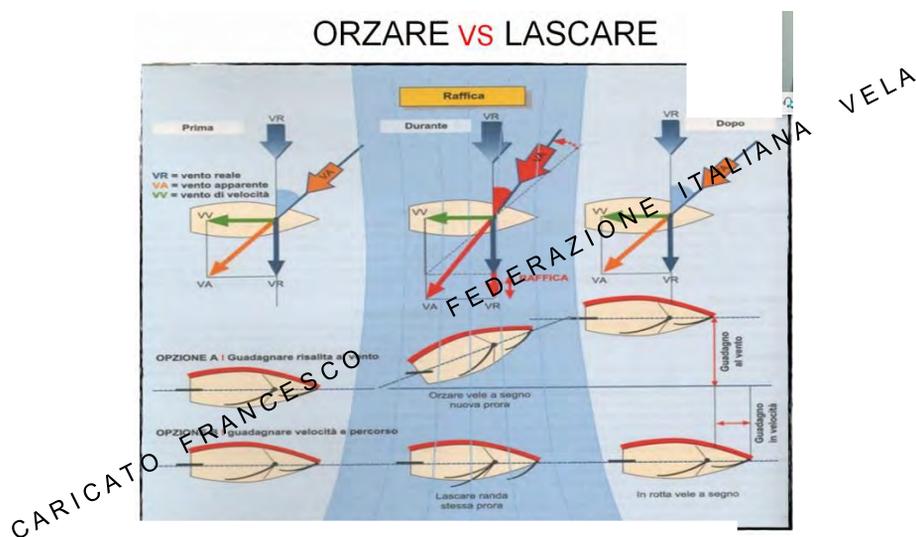
## UN BRAVO REGATANTE DEVE:



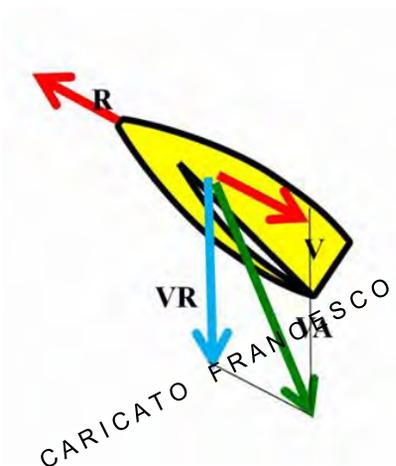
## FONDAMENTALE PER TECNICA E' SAPERE COME RUOTA IL VENTO APPARENTE



# COSA SUCCEDDE AL VENTO APPARENTE QUANDO ARRIVA UNA RAFFICA?????



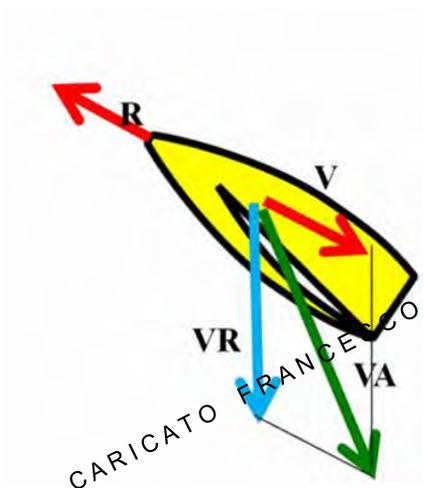
## RAFFICA



### **IMPORTANTE:**

L'AUMENTO DELLA VELOCITA' DELLA BARCA (VENTO D'AVANZAMENTO) NON E' PROPORZIONALE ALL'INTENSITA' DEL VENTO REALE E DIPENDE DALLE CARATTERISTICHE DELLO SCAFO

## RAFFICA



### **IMPORTANTE:**

L'AUMENTO DELLA VELOCITA' DELLA BARCA (VENTO D'AVANZAMENTO) DIPENDE DALLA VELOCIT' CHE LA BARCA AVEVA PRIMA DELLA RAFFICA

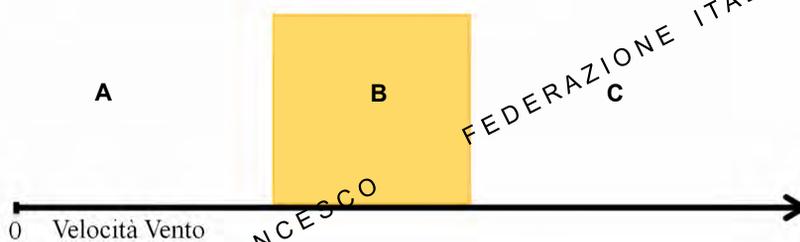
+ abbrivio = - accelerazione  
 - abbrivio = + accelerazione

+ vento = + accelerazione  
 - abbrivio (rallenta prima)

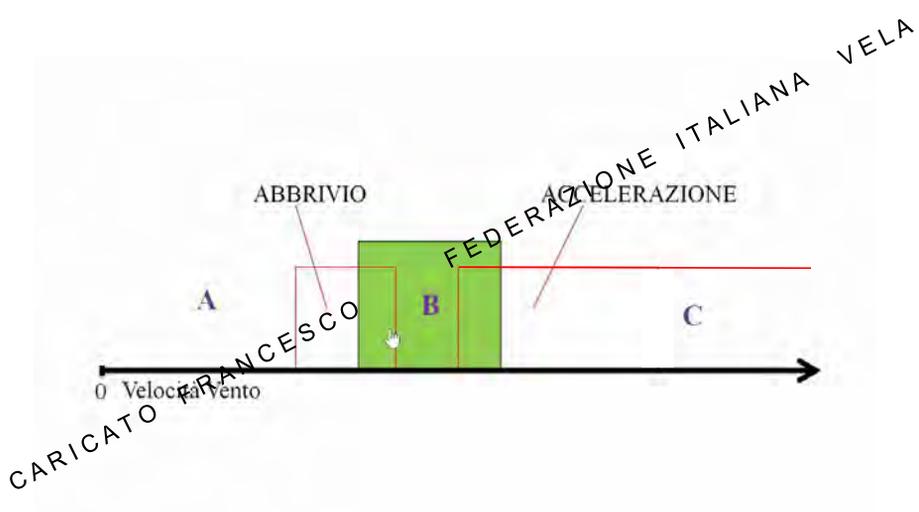
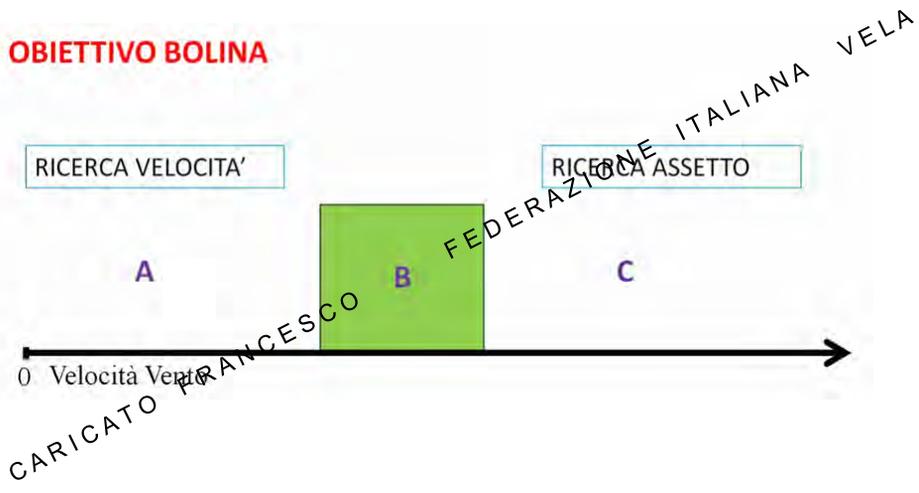
- vento = + abbrivio  
 - accelerazione

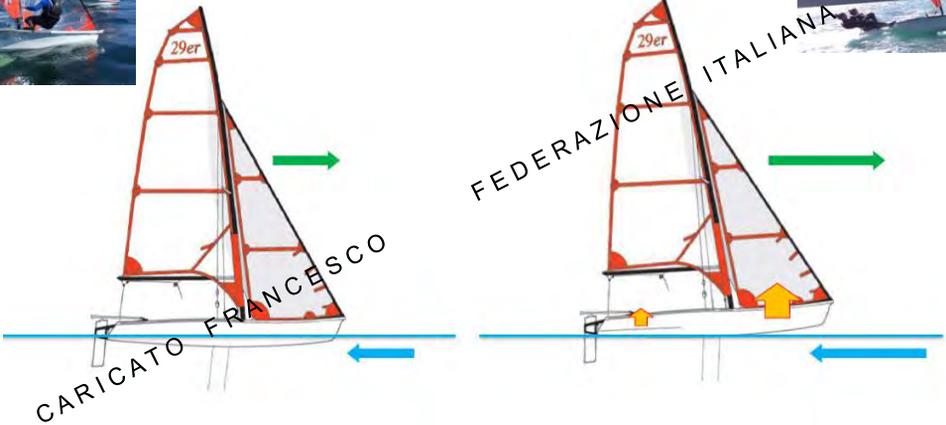
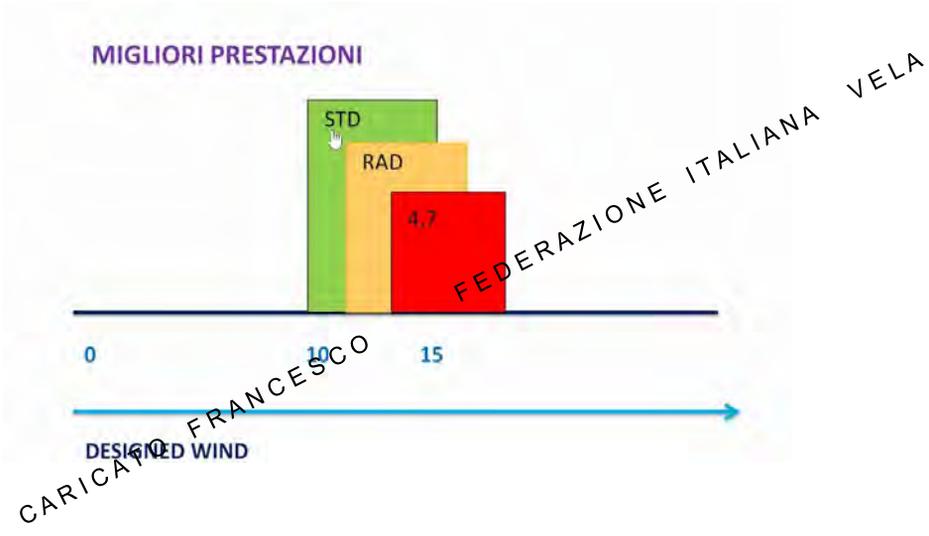


### ZONA DELLE MIGLIORI PRESTAZIONI

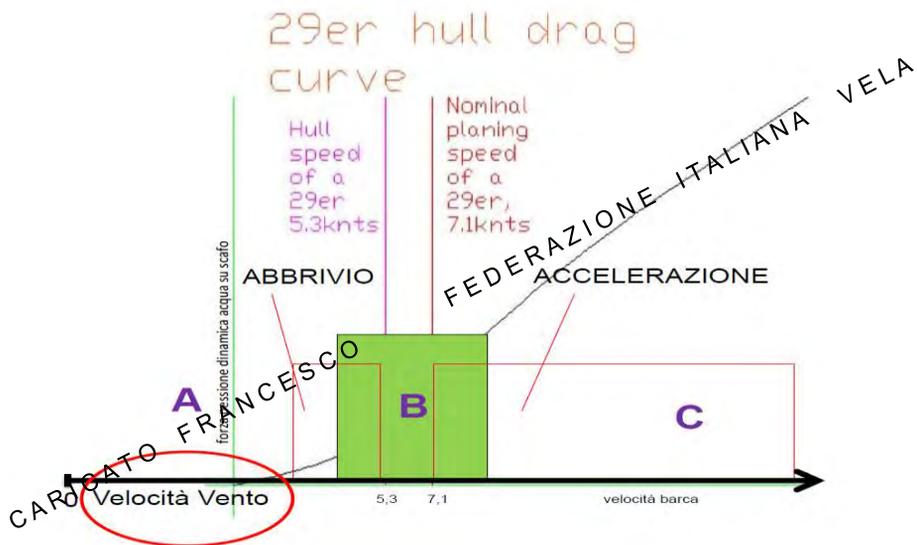
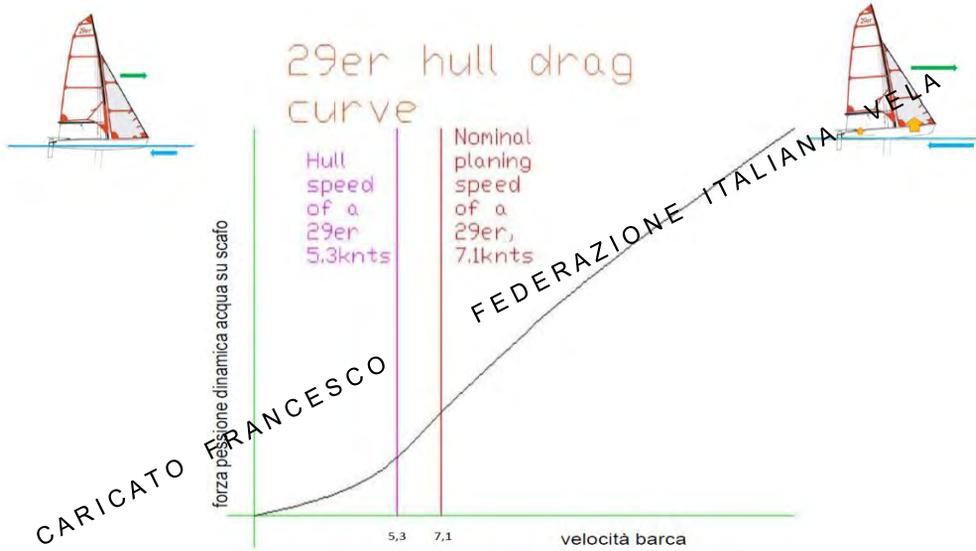


### OBIETTIVO BOLINA

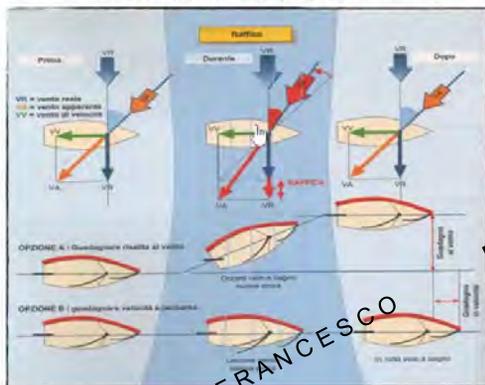




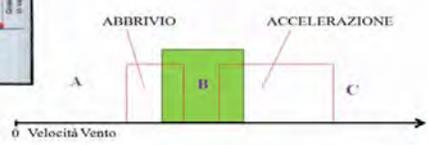
Spinta dell'acqua sullo scafo



### ORZARE VS LASCARE



se sono lento = ricerca velocità  
 se ho abbrivio = guadagno di vento  
 se ho accelerazione = faccio strada



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FEDERAZIONE ITALIANA VELA

### Accelerare nella raffica

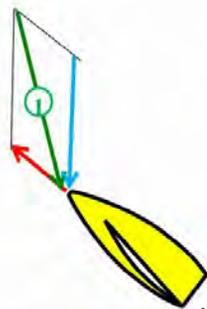


Fig.1

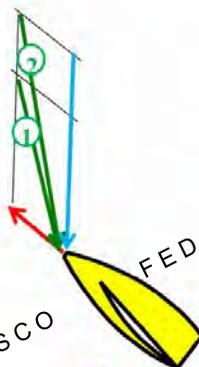


Fig.2



Fig.3

NB: rappresentazione grafica non giusta, ma disegnata per far capire meglio rotazione

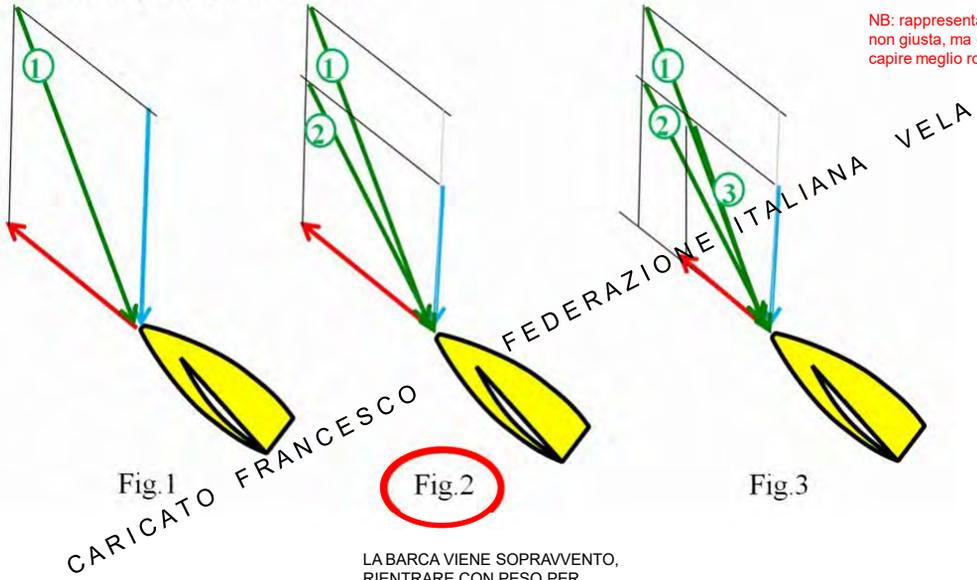
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FEDERAZIONE ITALIANA VELA

AUMENTO MOMENTO  
 SBANDANTE PERCHE' VELE  
 TROPPO CAZZATE, ESCO FUORI  
 E LASCO LE VELE, LA BARCA IN  
 ASSETTO ACCELERA

LA BARCA ACCELERA E IL VENTO  
 APPARENTE TORNA A PRUA

Guadagnare nella mollana



NB: rappresentazione grafica non giusta, ma disegnata per far capire meglio rotazione

Fig.1  
CARICATO FRANCESCO

Fig.2

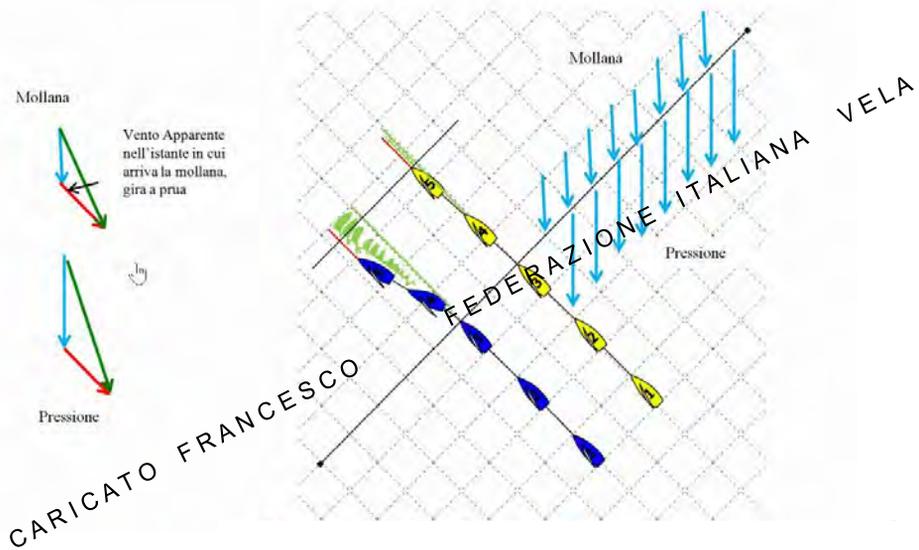
Fig.3

LA BARCA VIENE SOPRAVENTO,  
RIENTRARE CON PESO PER  
MANTENERE PIU' POSSIBILE  
VELOCITA' E CAZZARE LE VELE  
PER NUOVO VENTO APPARENTE

Mollana

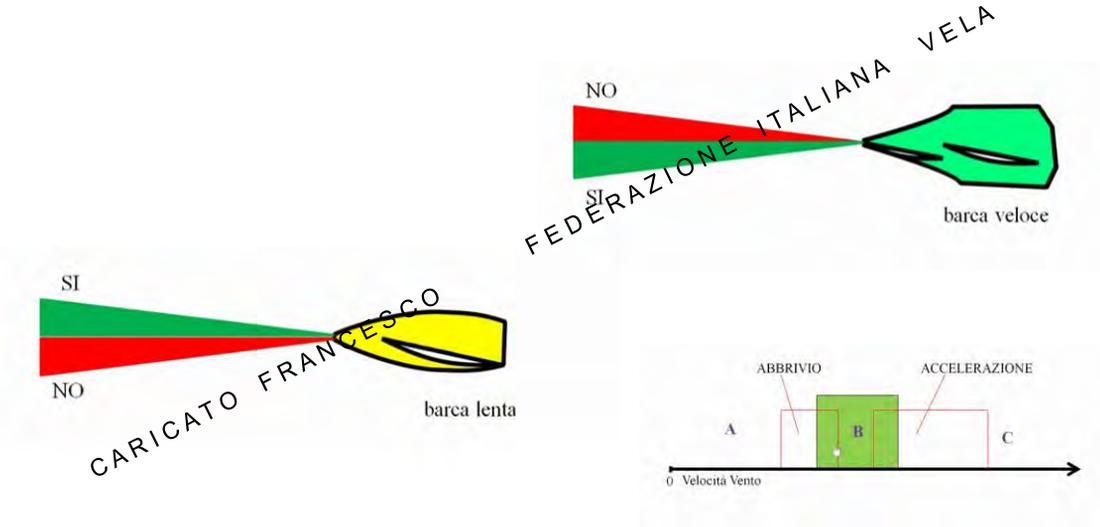
Vento Apparente  
nell'istante in cui  
arriva la mollana,  
gira a prua

Pressione

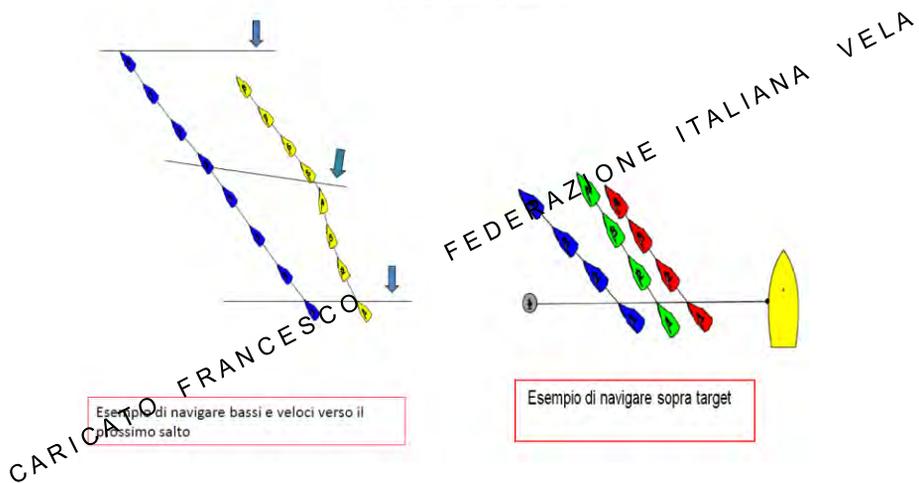


CARICATO FRANCESCO

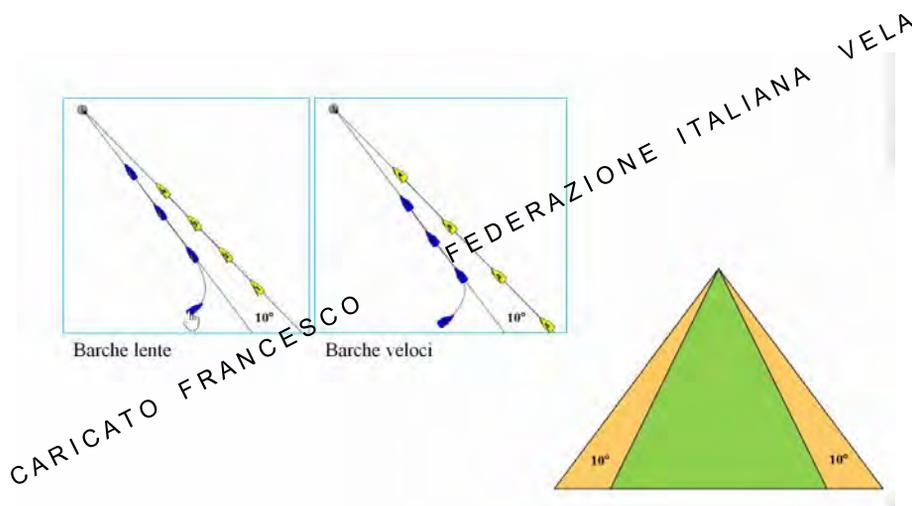
Cambiare modalità: navigare sopra target o bassi e veloci



Cambiare modalità



## BASSI E VELOCI



## CONDUZIONE DI BOLINA ILCA

- LO SCAFO COME LA SAPONETTA

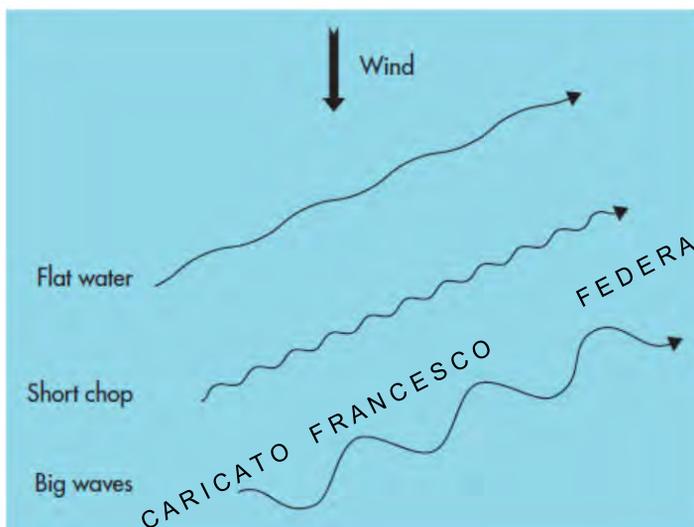


REGOLAZIONE VELE: Se non faccio "fatica" non cammino

## Conduzione di BOLINA



### ROTTA DI BOLINA IN BASE ALL'ONDA

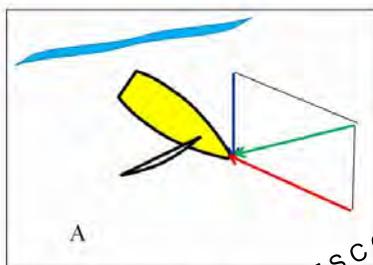


Flat water: movimenti piccoli (fluidi) ma frequenti, per mantenere la barca con angolo ottimale al vento.

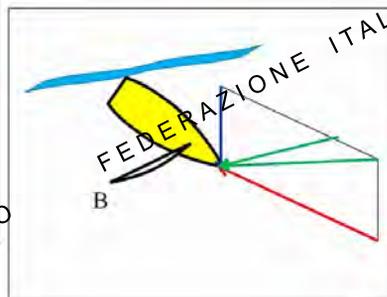
Short chop: movimenti piccoli e rapidi del timone, accompagnati da movimenti del corpo per non far sbattere la prua.

Big waves: movimenti lenti, con grandi cambiamenti di angolo, per mantenere la barca a contatto con le onde. Maggior uso della scotta

## COME RUOTA IL VENTO APPARENTE IN PLANATA



ACCELERAZIONE IN PLANATA



CARICATO FRANCESCO

FEDERAZIONE ITALIANA VELA

NB: rappresentazione grafica non giusta, ma disegnata per far capire meglio rotazione



In planata quindi dobbiamo:

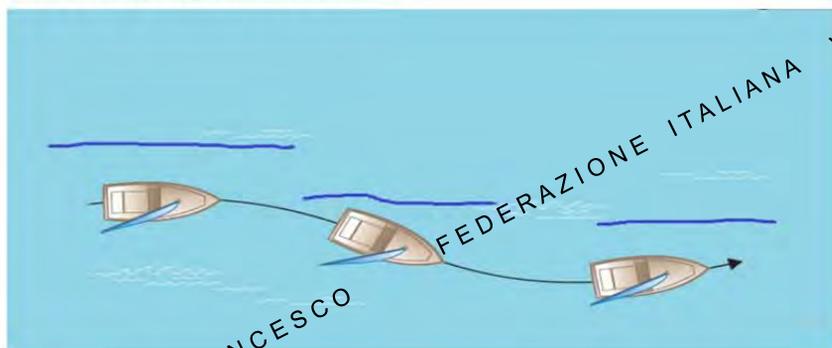
o Cazzare le vele

o Poggiare

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FEDERAZIONE ITALIANA VELA

## TECNICA NAVIGAZIONE

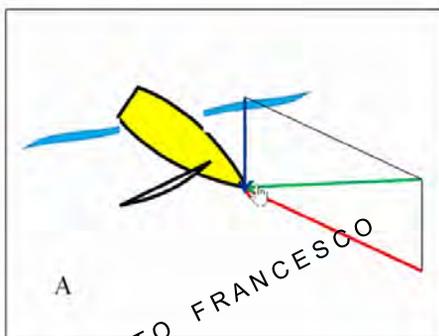


CARICATO FRANCESCO

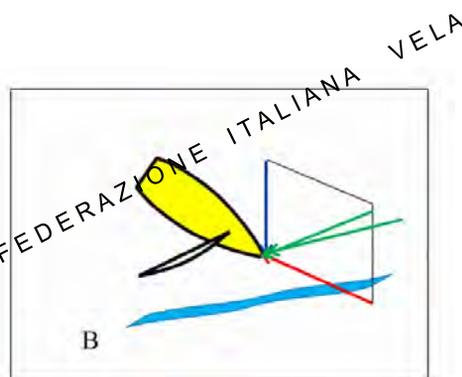
POGGIARE

NB: rappresentazione grafica  
non giusta, ma disegnata per far  
capire meglio rotazione

Quando è finita la planata

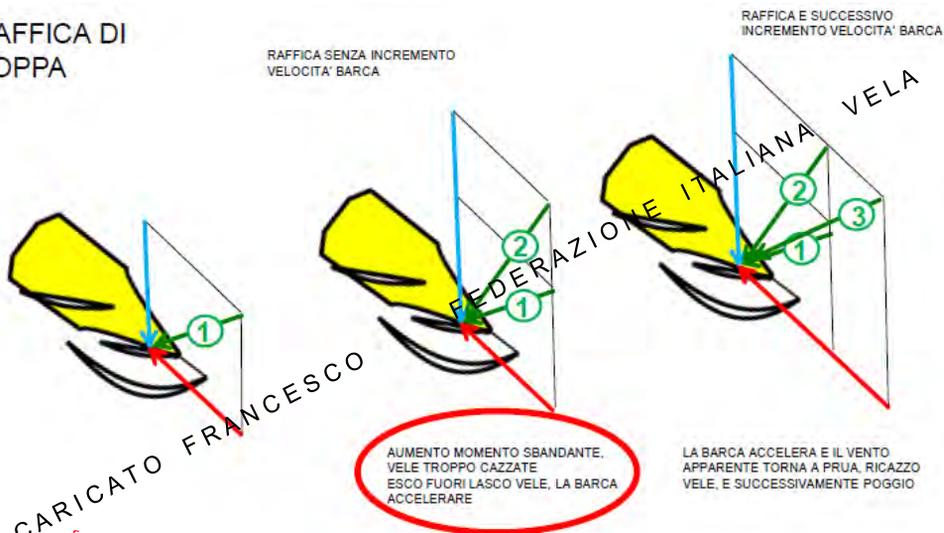


CARICATO FRANCESCO



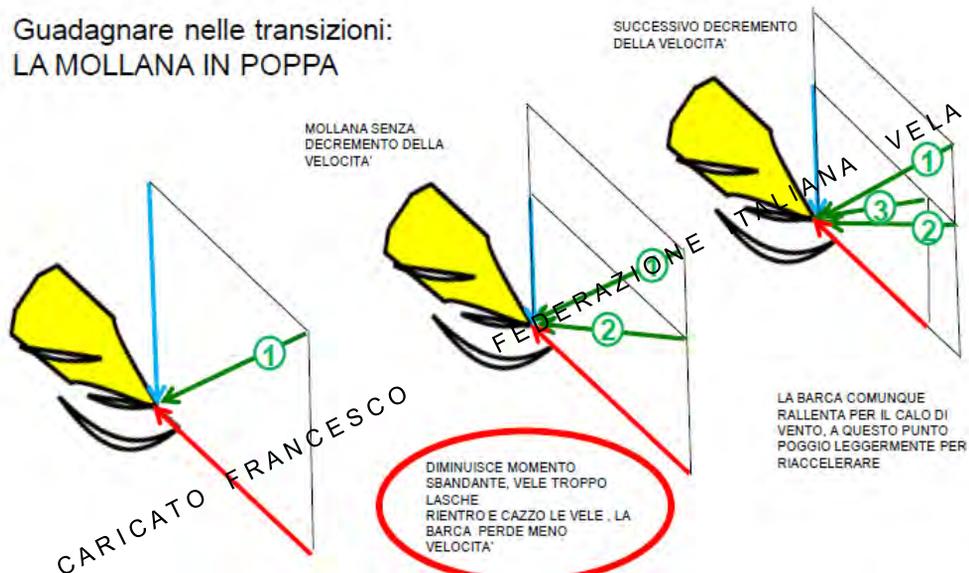
B

RAFFICA DI POPPA

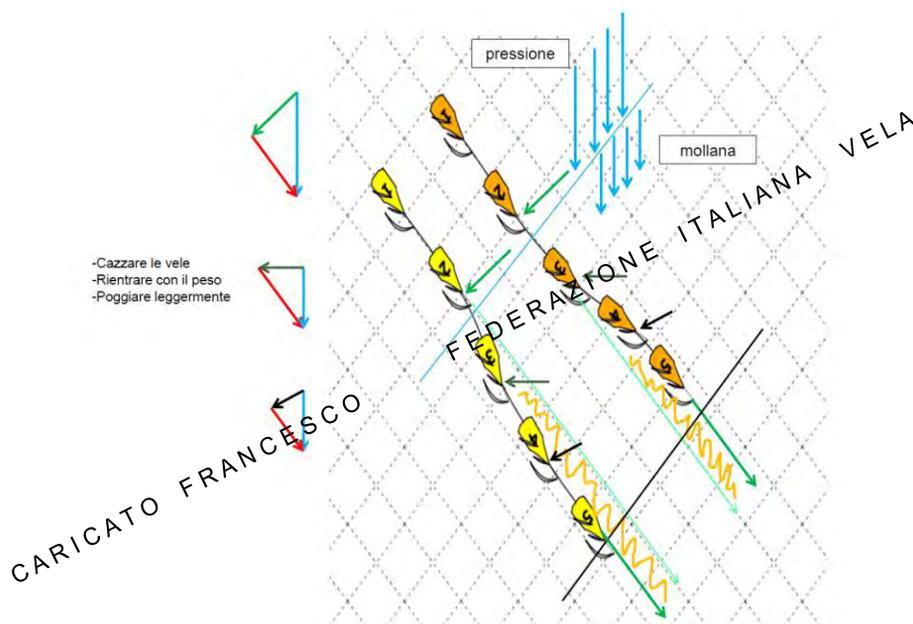


NB: rappresentazione grafica non giusta, ma disegnata per far capire meglio rotazione

Guadagnare nelle transizioni:  
LA MOLLANA IN POPPA



NB: rappresentazione grafica non giusta, ma disegnata per far capire meglio rotazione



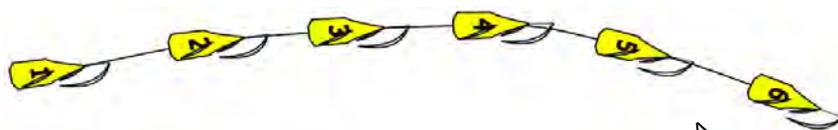
## PER TROVARE L'ANGOLO DI POPPA

### E' IMPORTANTE:

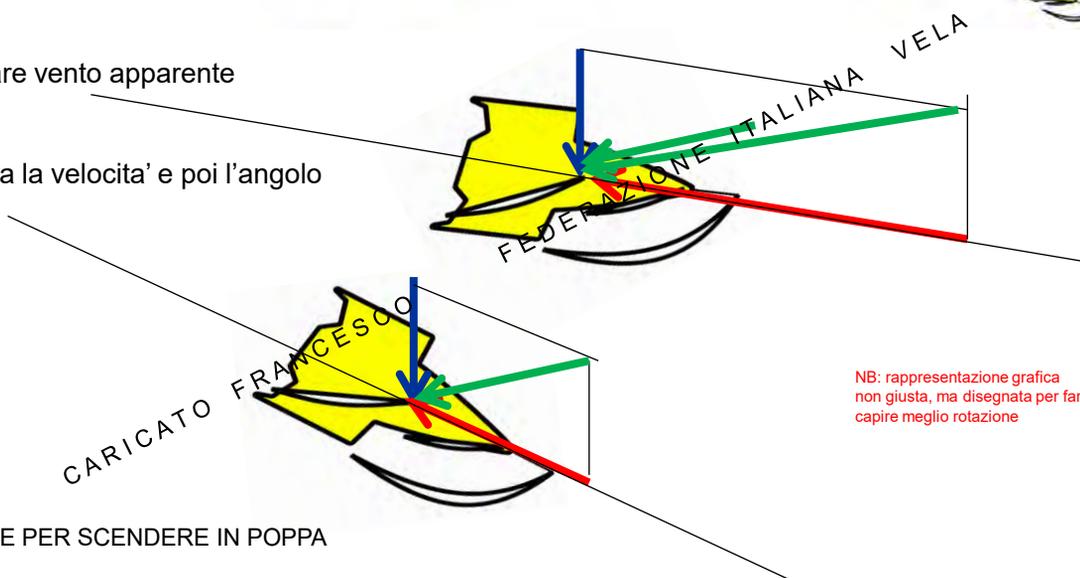
- TROVARE FEELING CON LA BARCA (sentire accelerazioni e decelerazioni)
- COMUNICAZIONE TIMONIERE/PROBBIERE
- RICERCARE LE PRESSIONI
- OSSERVARE ALTRE IMBARCAZIONI (dove si trovano gli avversari e dove state andando voi)

**- STRUMENTAZIONE**

- Guardarsi intorno
- Andare a prendere la pressione



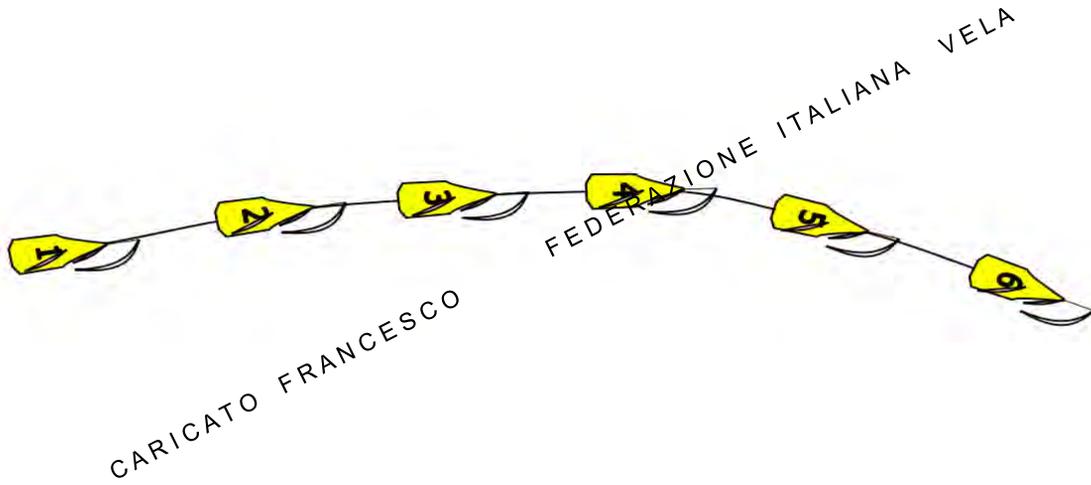
- Creare vento apparente
- Prima la velocita' e poi l'angolo



NB: rappresentazione grafica non giusta, ma disegnata per far capire meglio rotazione

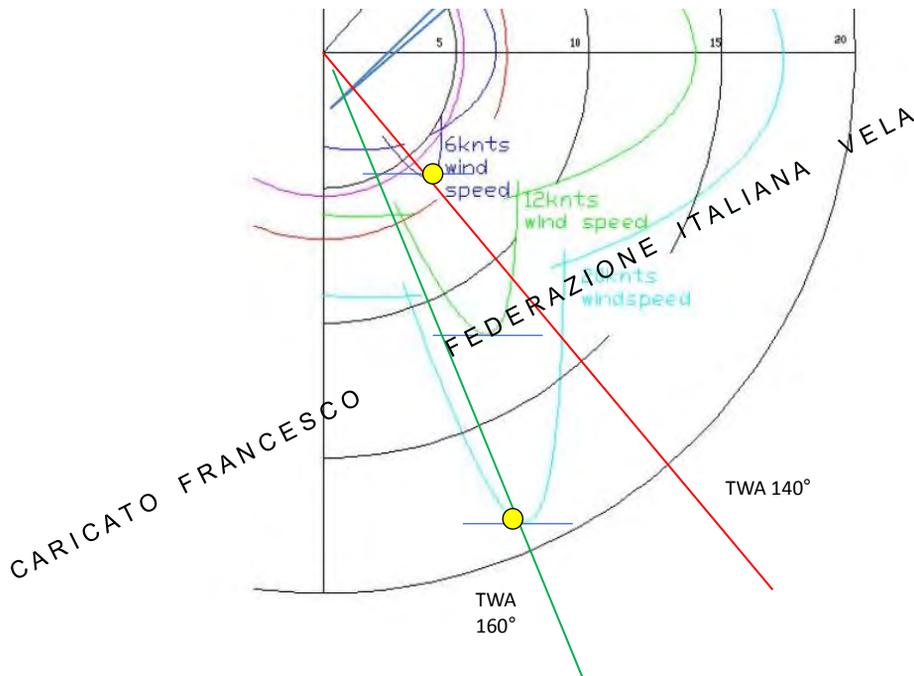
ORZARE PER SCENDERE IN POPPA

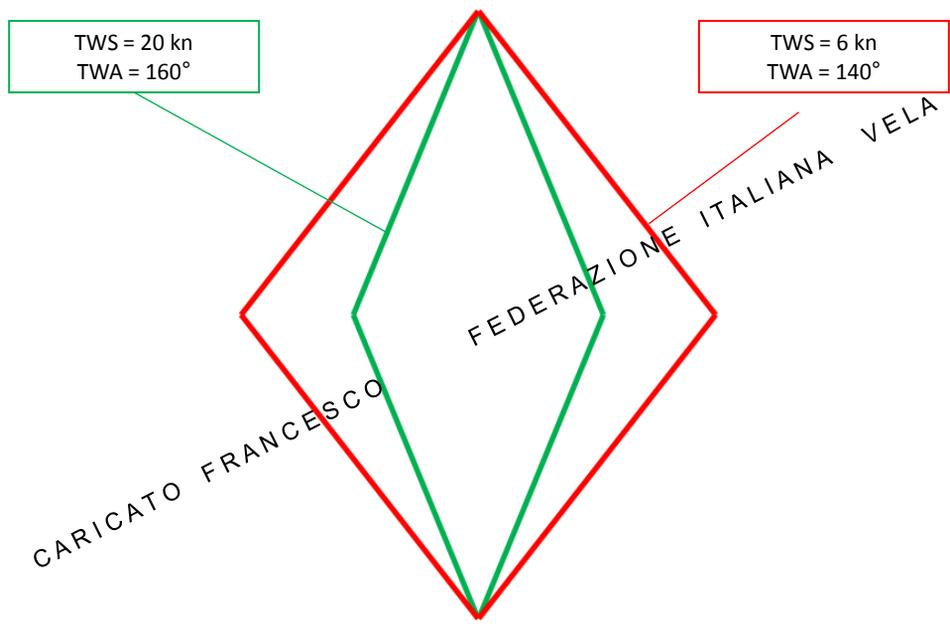
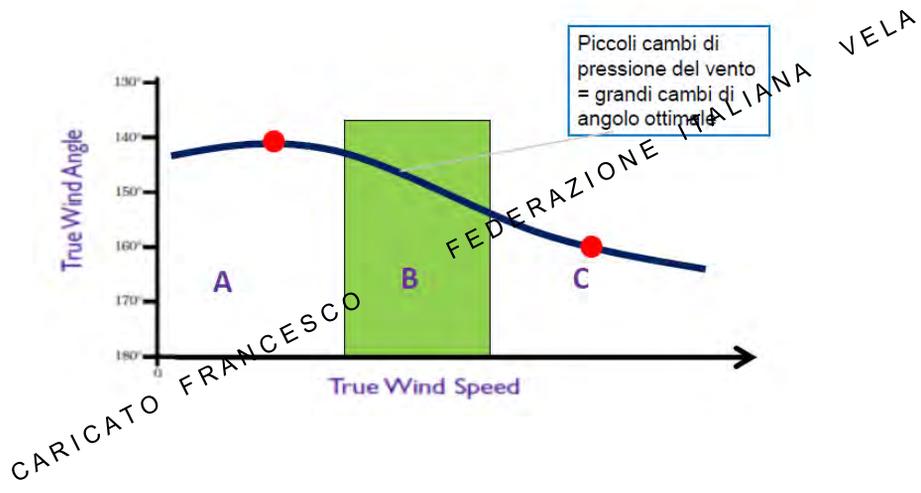
ORZARE PER SCENDERE IN POPPA

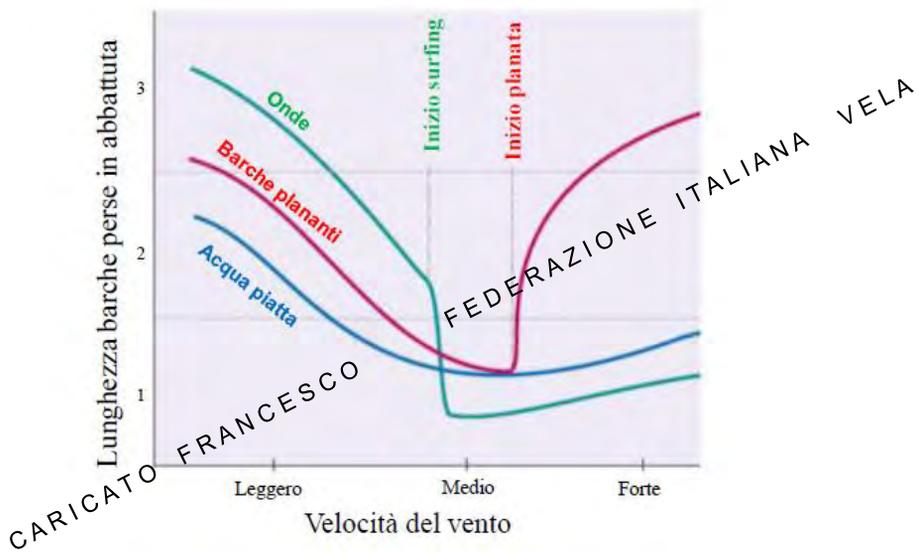
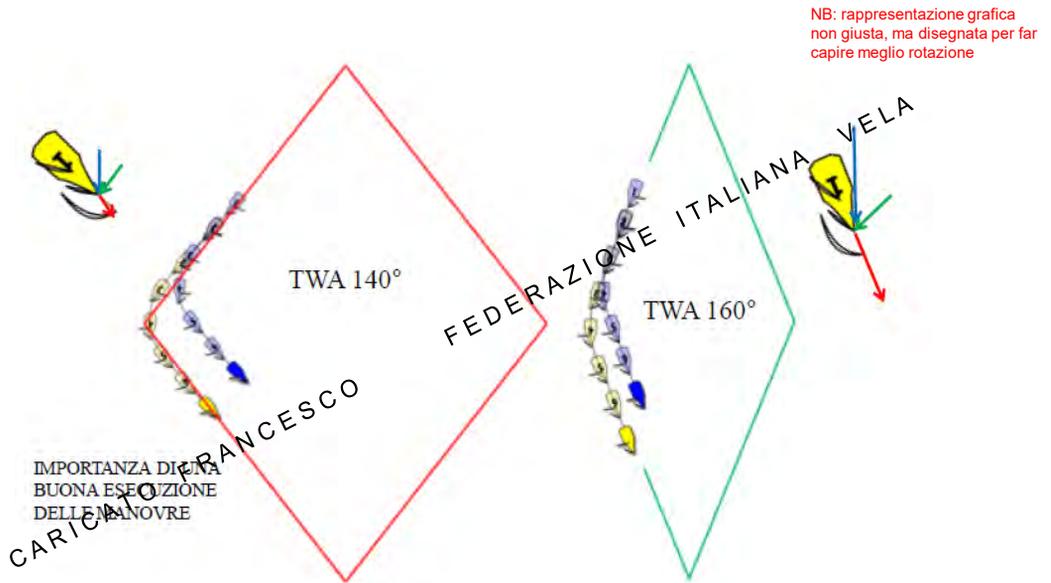


POLARI 29°

Poppa







## CRITICITA' CON VENTO TESO

- ESECUZIONE MANOVRE
- GESTIONE RAFFICHE DI POPPA

IMPOSSIBILITA' DI ALZARE LA  
DERIVA



CARICATO FRANCESCO

FEDERAZIONE ITALIANA VELA

CARICATO FRANCESCO