



Un aggiornamento sui protocolli di
riabilitazione e sul return-to-play dopo
ricostruzione LCA nello sportivo

Dalla chirurgia al return-to-play: un aggiornamento

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Benvenuti!

- Fisioterapista
- Docente MASF

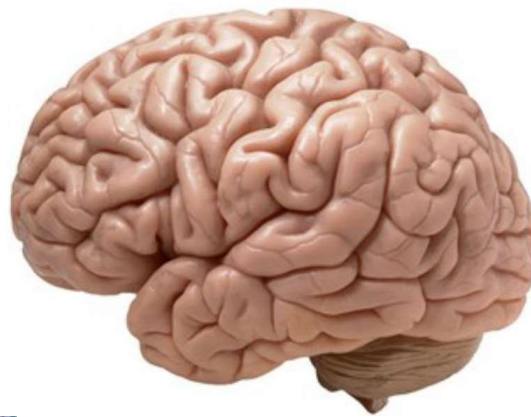
Background:

- Volley
- Basket

Agenda

1. Cosa succede in caso di infortunio?
2. Tempi e struttura riabilitazione
3. Return to play
4. Recidive

Premessa





G

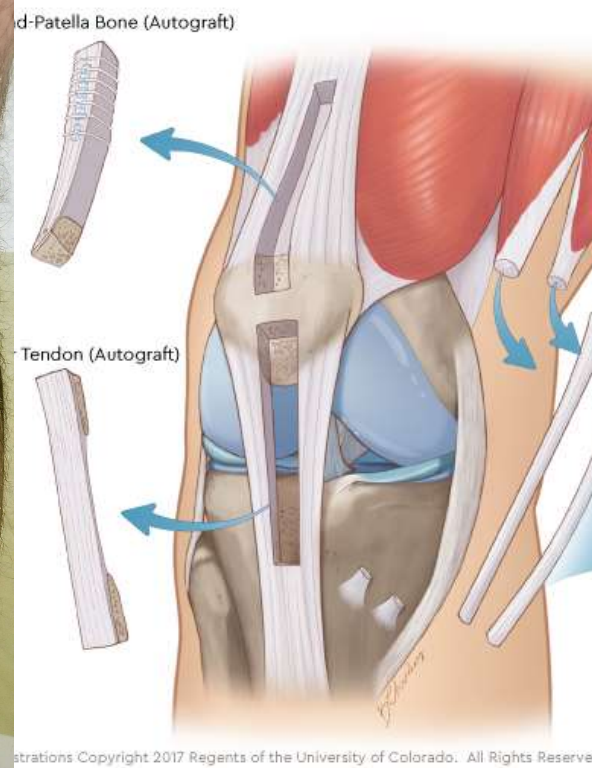
H

Della Villa F, et al BJSM 2020

6-12 mesi



Graft Locations



12-24 mesi



Pauzenberger L, Syre S, Schurz M. "Ligamentization" in hamstring tendon grafts after anterior cruciate ligament reconstruction: a systematic review of the literature and a glimpse into the future. Arthroscopy. 2013 Oct; 29(10):1712-21

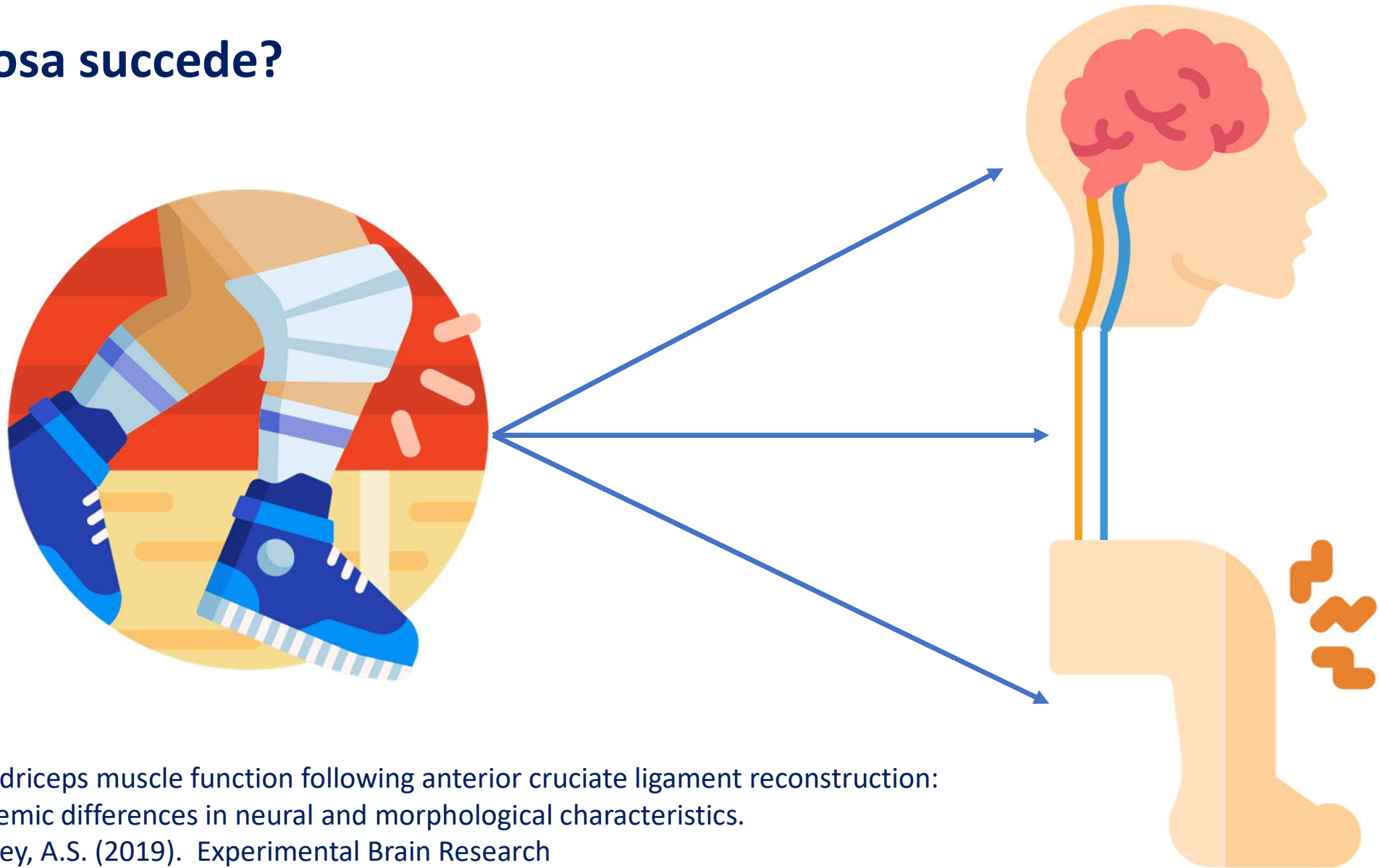
Dalla chirurgia al return to play

Atleti operati al crociato:

- **81%** ritorna allo sport
- **65%** ritorna a livello pre-infortunio
- **55%** ritorna allo stesso livello di performance

Arder CL, et al . Fifty-five per cent return to competitive sport following anterior cruciate ligament reconstruction surgery: an updated systematic review and meta-analysis including aspects of physical functioning and contextual factors.
Br J Sports Med. 2014;48(21):1543–52.

Cosa succede?



Quadriceps muscle function following anterior cruciate ligament reconstruction:
systemic differences in neural and morphological characteristics.

Lepley, A.S. (2019). Experimental Brain Research

Esiti

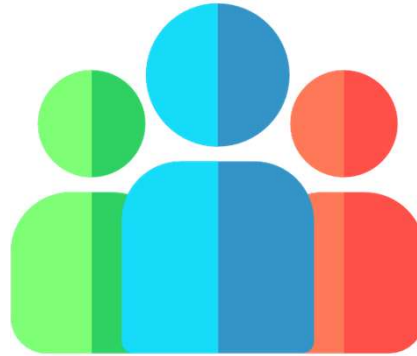
- **Deficit forza quadricipite persistente**
(Needle et al. 2017; Pietrosimone et al. 2012)
- **Riduzione capacità visuo-motoria**
(Grooms et al. 2015)
- **Eccitabilità tratti discendenti**
(Heroux and Tremblay 2006; Lepley et al. 2014, 2015b; Pietrosimone et al. 2015)
- **Eccitabilità riflessi spinali**
(Hoffman and Koceja 2000; Lepley et al. 2015; Pietrosimone et al. 2015; Rosenthal et al. 2009)



Barriere



Psicologiche



Sociali

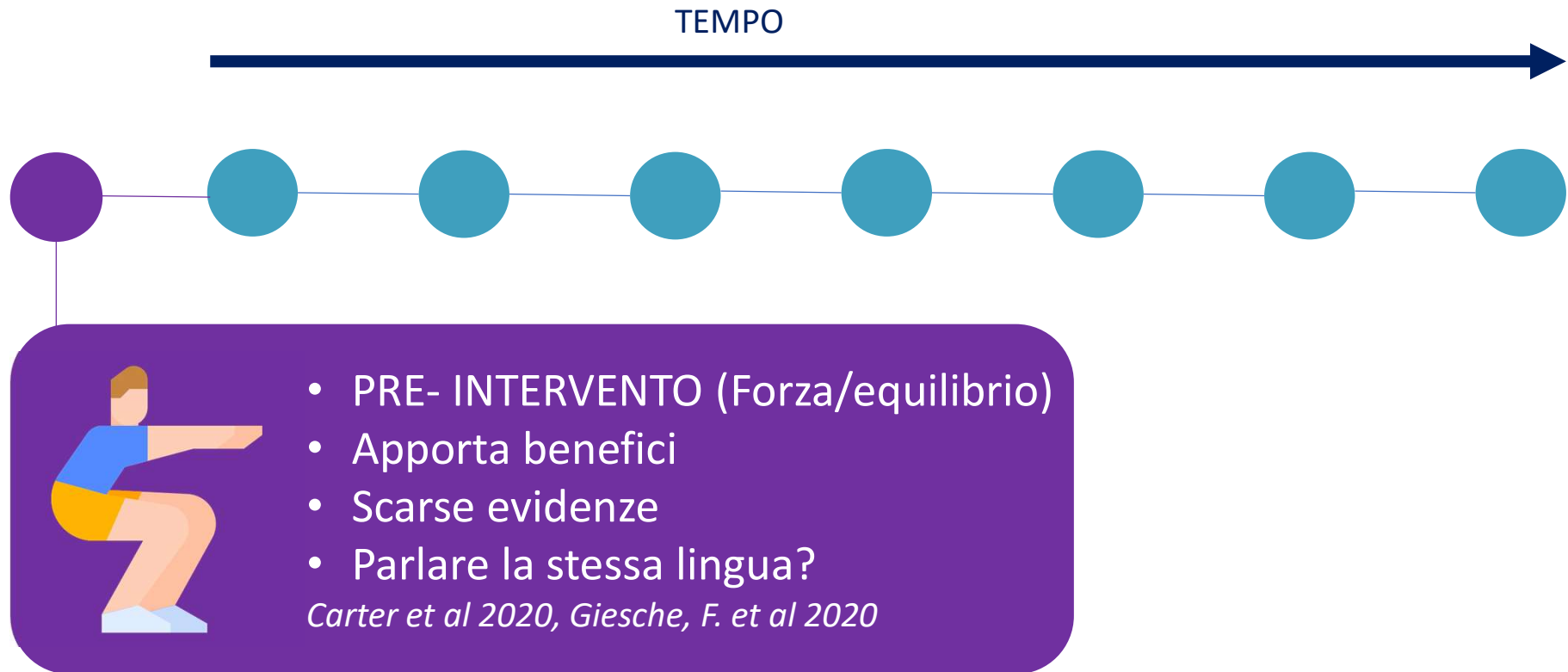


Contesto

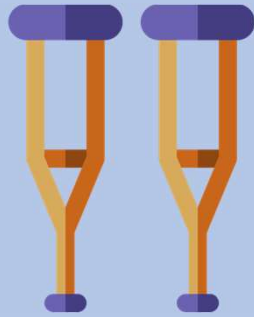
Walker et al. Sports Medicine - Open (2020)

The Influence, Barriers to and Facilitators of Anterior Cruciate Ligament Rehabilitation Adherence and Participation: a Scoping Review

Progressione riabilitazione



Progressione riabilitazione



- Gestione fase acuta
- Training deambulazione
- Recupero ROM (Estensione)
- Reclutamento muscolare (Biofeedback)

Joreitz, Rick et al. IJSPT 2016



Progressione riabilitazione



- Reclutamento muscolare
 - Recupero forza
 - Esercizi Monopodalici
- Joreitz, Rick et al. IJSPT 2016*



- W 3/4
- ROM adeguato

Progressione riabilitazione



- 90°-45° @ W 4

Fukuda et al AJSM 2013

- 0°-90° @ W 6 o W 12

Beynnon et al AJSM 2005

IN VIVO ANTEROMEDIAL BAND STRAIN PATTERN ACTIVE AND PASSIVE KNEE EXTENSION

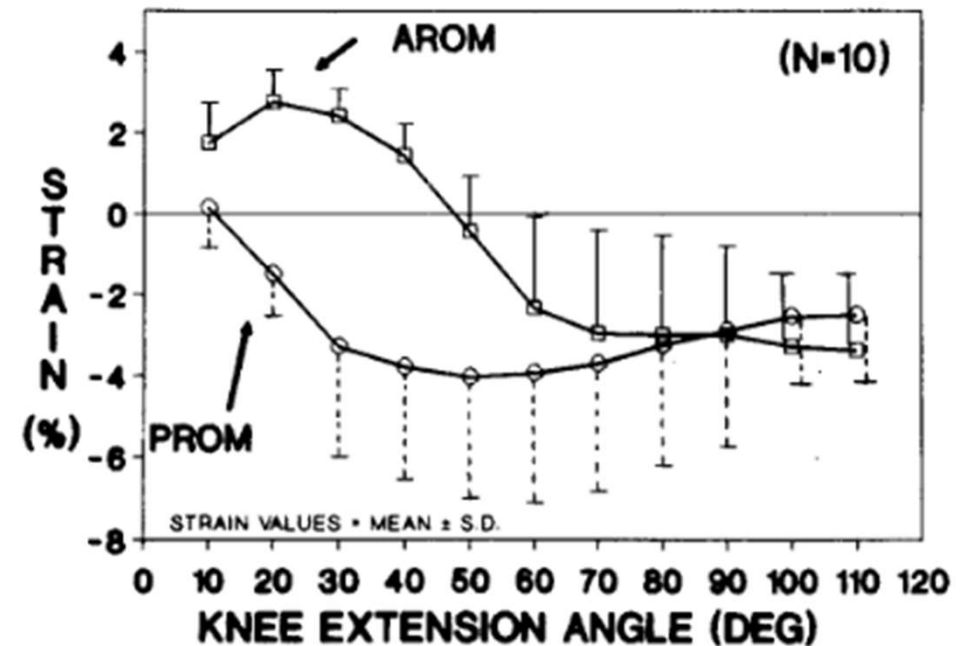
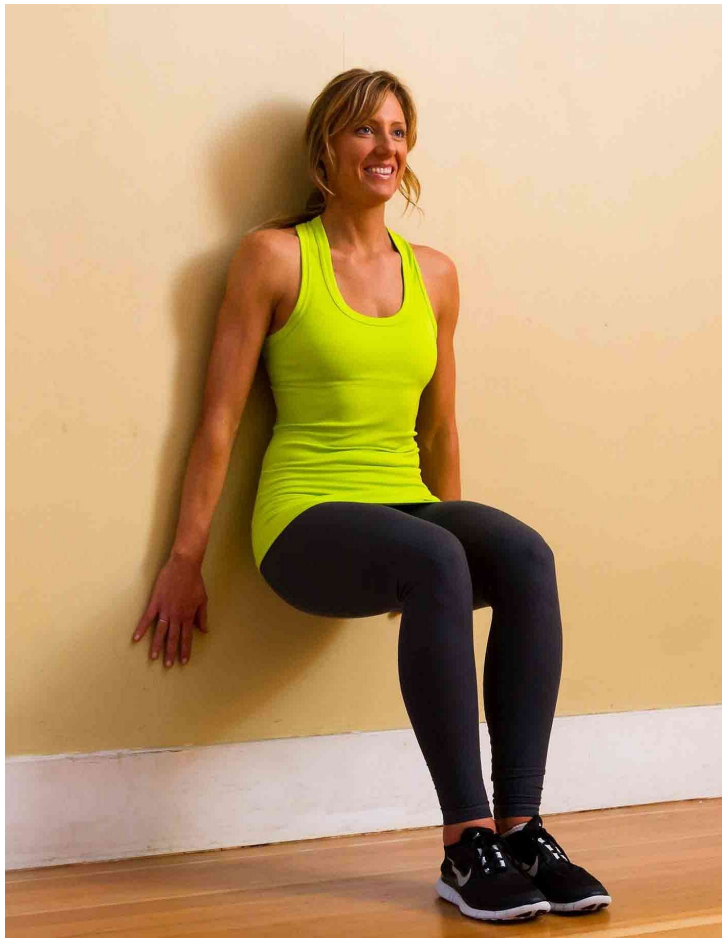


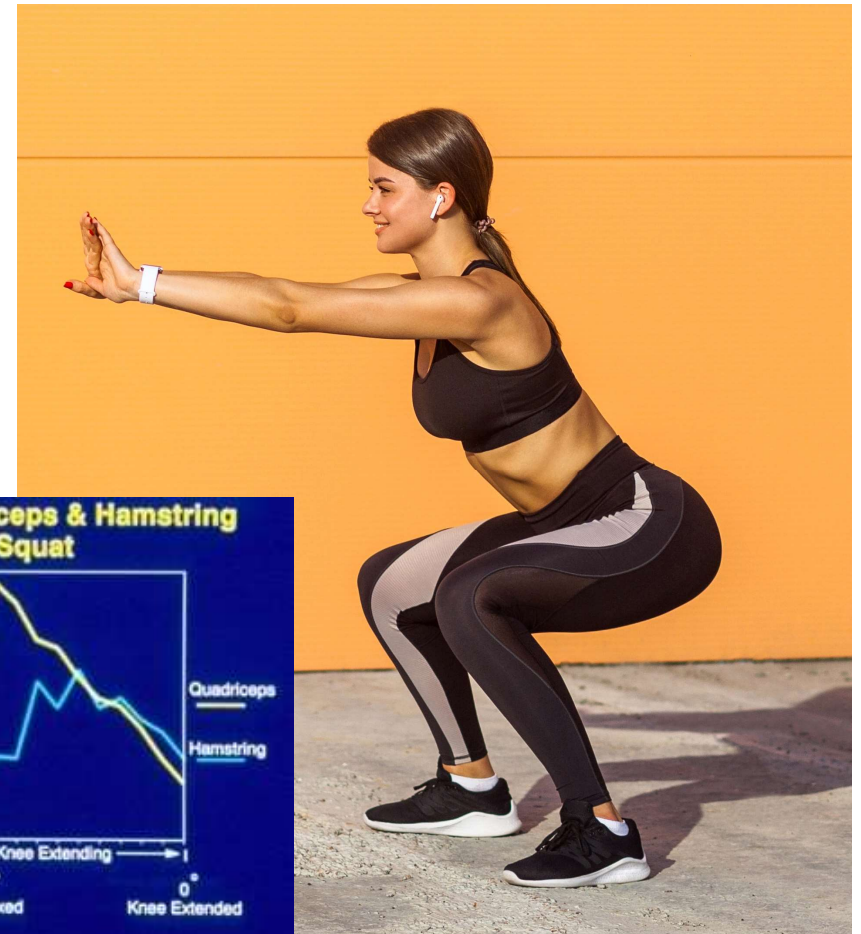
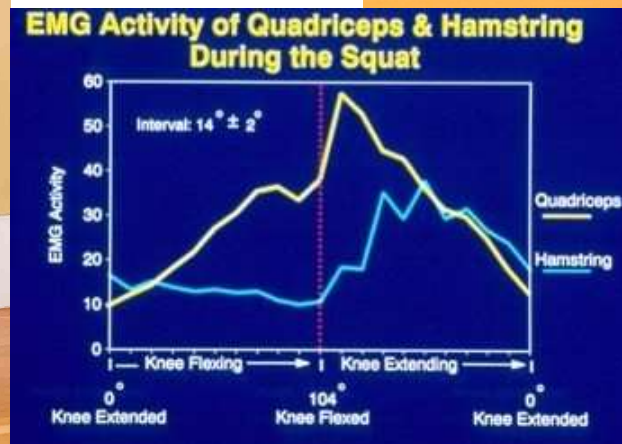
Fig. 8. Average data for all ten study subjects for active and passive motion of the knee joint. A graph of anteromedial band strain (%) versus knee angle

Beynnon, B. (1992) International Orthopaedics

Progressione riabilitazione



NO co-contrazione



SI co-contrazione

Progressione riabilitazione



Progressione riabilitazione

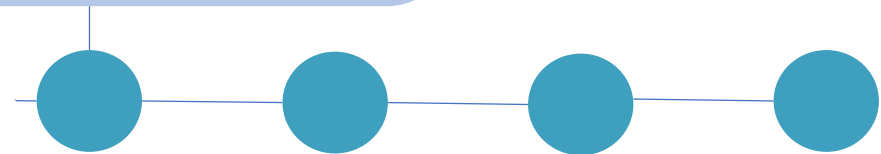
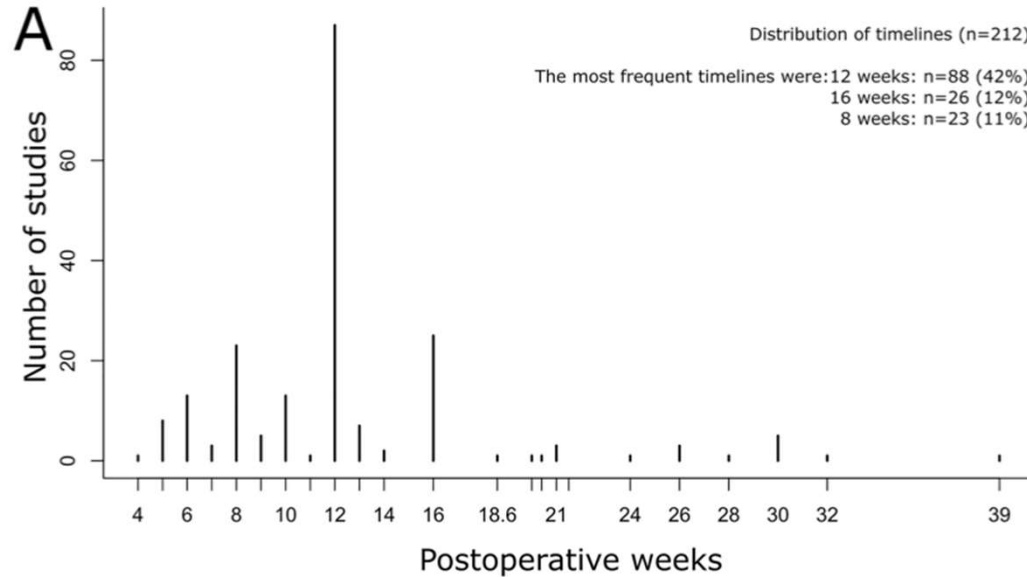


Return to run



- 12 W
- ROM > 95% controlaterale
- Assenza dolore/gonfiore
- Controllo/Forza Monopodalico

A Rambaud et al (2018)



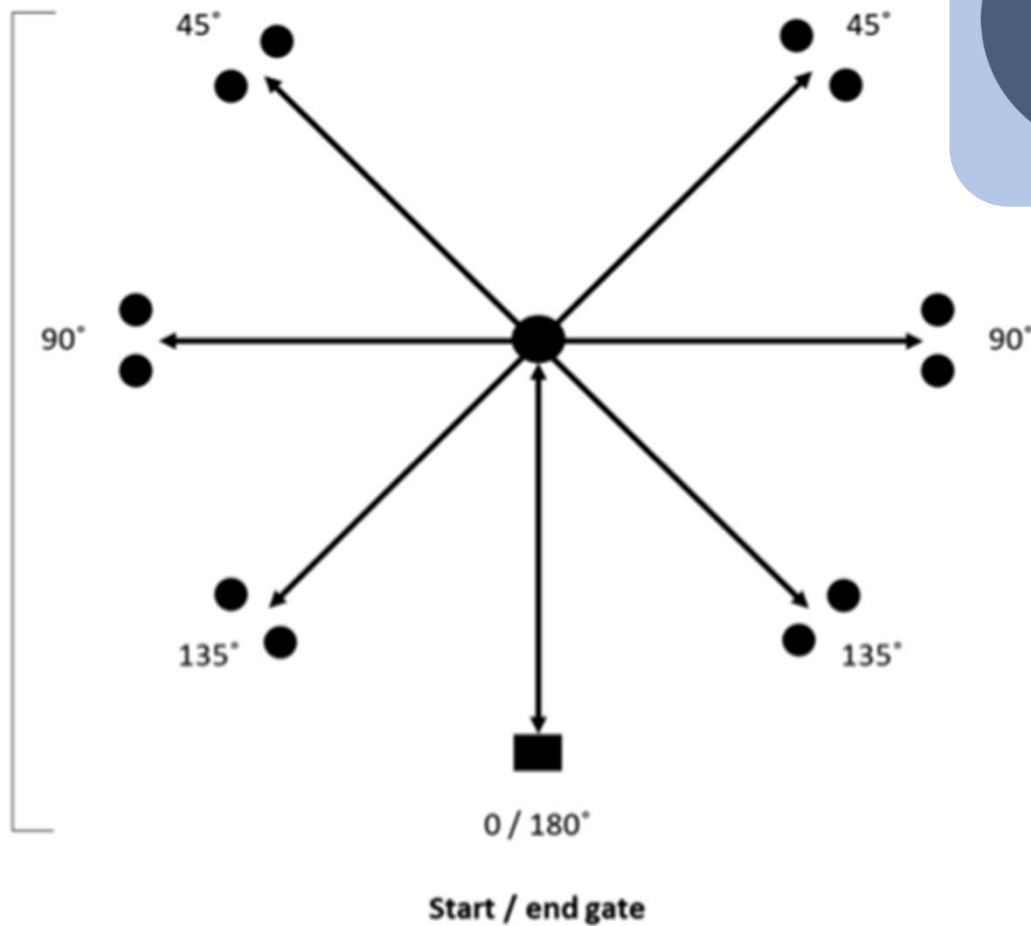
Atterraggio

Lesione LCA Ginocchio DX

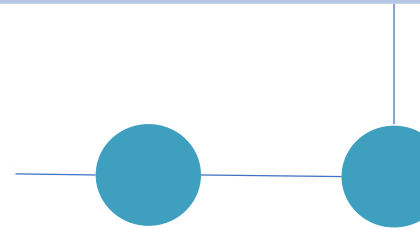
- Stiff Landing
17-02-2020
- Soft Landing
25-05-2020



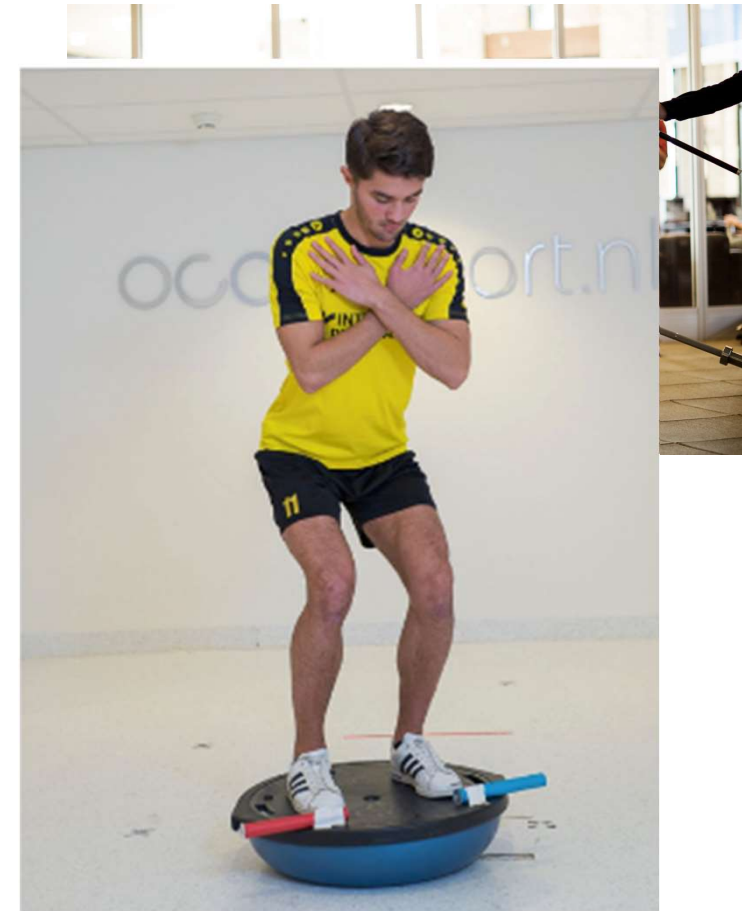
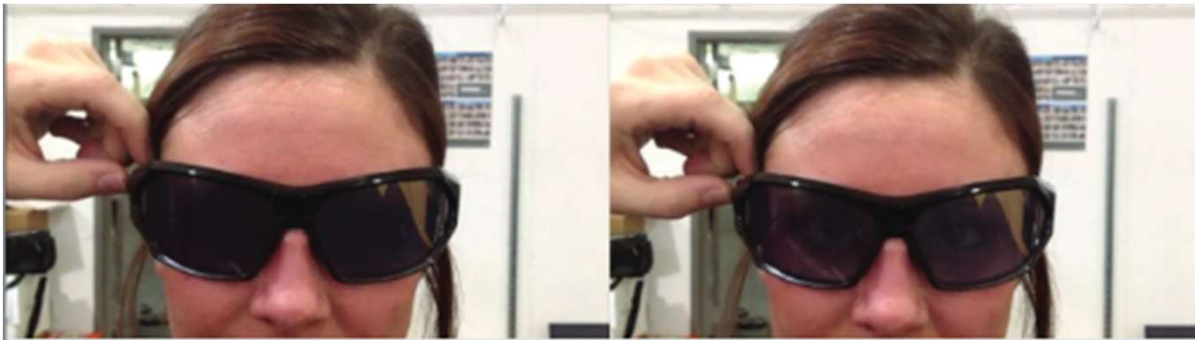
Cambi di direzione



- Esercizi in torsione
 - Elemento chiave degli infortuni
 - Velocità / Angolo / Affaticamento
- J Marques (2020)*



Esempi



Gokeler, A., 2019. Sports Medicine

Landing



- Altezza box
- Bipodalico
- Monopodalico
- Atterraggio singolo
- Balzi ripetuti



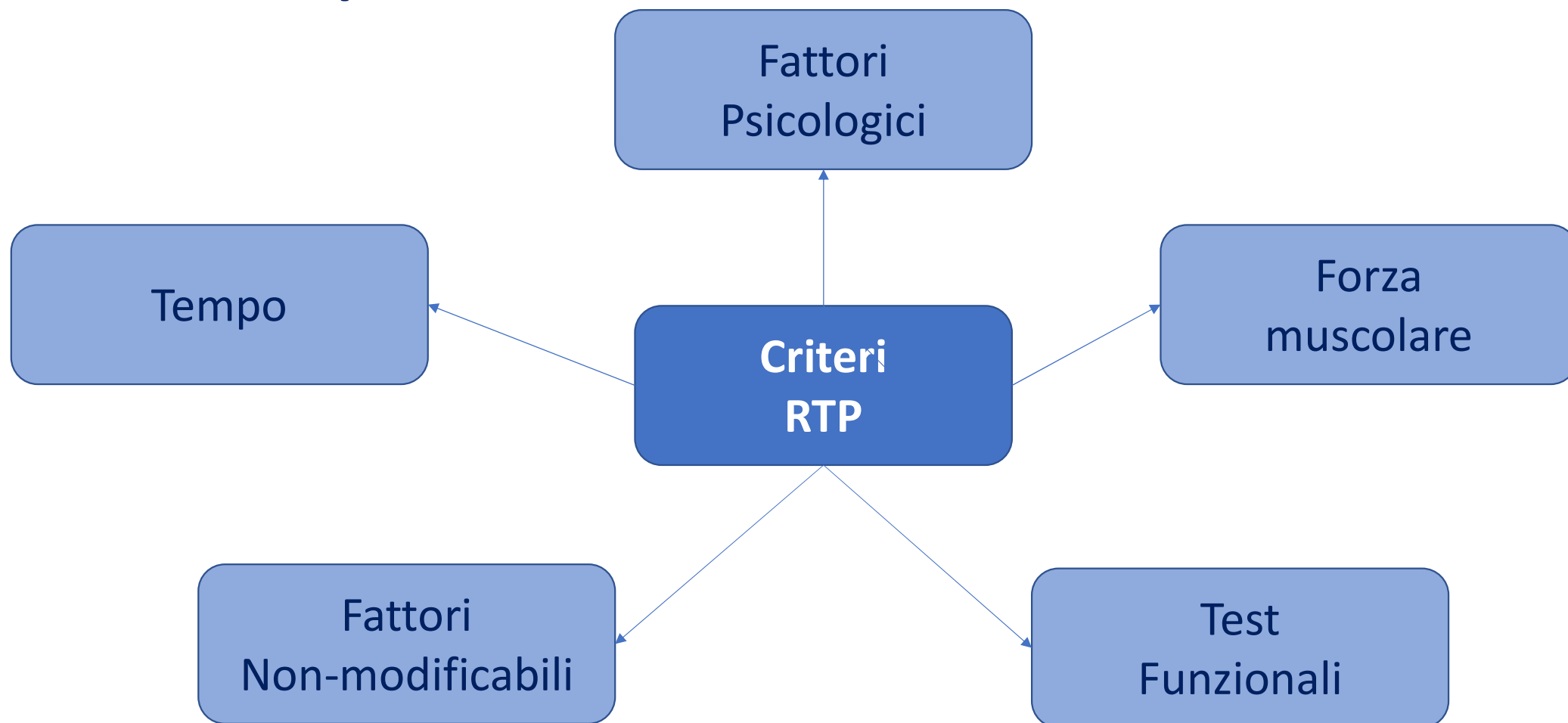
- Multiple direzioni
- Valgo stress mediale

Return to Sport

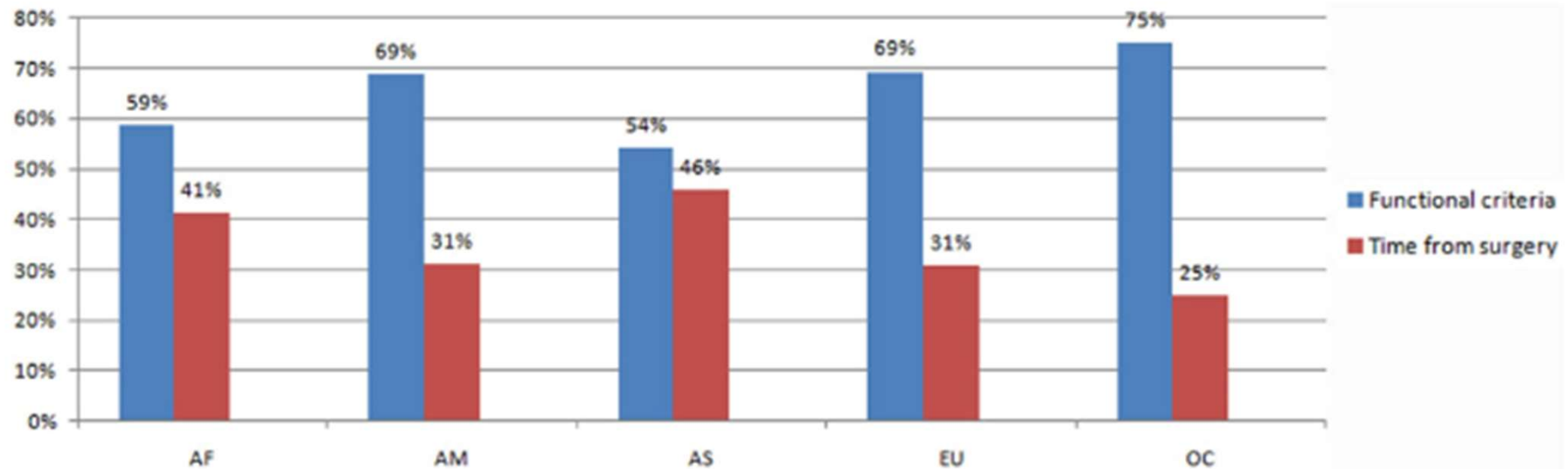


- Aspetti metabolici
- Esercizi sport specifici
 - Livello sport

Return to Sport



Return to Sport



Vascellari, A., Gokeler, A., Grassi, A., Canata, G.L., Zaffagnini, S., Jones, H., 2020. Functional progression milestones following anterior cruciate ligament reconstruction are more appropriate than time-based criteria: a survey among the ESSKA. Knee Surgery, Sports Traumatology, Arthroscopy

Tempi Return to Play

Simple decision rules can reduce reinjury risk by 84% after ACL reconstruction: the Delaware-Oslo ACL cohort study

Grindem H, et al. Br J Sports Med 2016;

- Chi torna prima dei 9 mesi= 39.5% Re-injury
- Chi torna dopo i 9 mesi= 19.4% Re-injury

Functional progression milestones following anterior cruciate ligament reconstruction are more appropriate than time-based criteria: a survey among the ESSKA

Vascellari et al Knee Surgery, Sports Traumatology, Arthroscopy (2020)

800 intervistati

	≤ 2 months (%)	2–4 months (%)	4–6 months (%)	6–8 months (%)	8–10 months (%)	10–12 months (%)	> 12 months (%)	I do not refer to time criteria (%)
Sport-specific rehabilitation	2.0	7.1	38.2	31.4	9.82	2.6	2.1	6.8
Sport-specific drills without contact	1.2	4.7	30.6	40.6	10.5	2.7	1.4	8.2
Sport-specific drills with contact	0.9	0.8	7.0	34.0	28.9	11.0	8.1	9.2

Test Return to Play

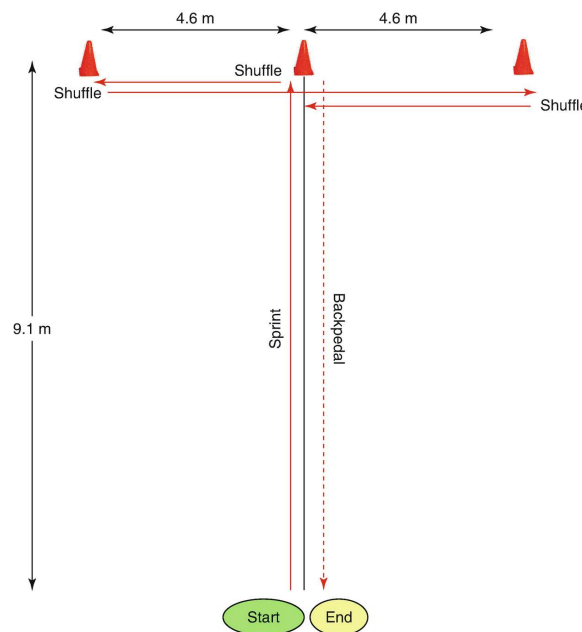
Forza (H/Q rapporto)

- Test isocinetico
- H/Q rapporto Arto Infortunato (F 55% - M 62.5%)

Funzionalità (LSI%)

- Single Leg Hop Test
- Triple Hop Test
- T run test

Score: IKDC, ACL-RSI



Lower Limb Symmetry Index



Welling, W., Benjaminse, A., Lemmink, K., Gokeler, A., 2020. Passing return to sports tests after ACL reconstruction is associated with greater likelihood for return to sport but fail to identify second injury risk. The Knee

Return to Sport



- Ricezione
- Ricezione e rincorsa
- Tecnica di salto per attacco



- Arresto e tiro
- Cambi di direzione
- Simulazione contatto



- Tipo di disciplina
- Cambi di direzione
- Spinta/Salti monopodalici

Recidive

5.8% - 11.8% a 5 anni

Wright RW et al. J Bone Joint Surg Am. 2011 Jun

23% - 27% a 10 anni

Bourke HE et al. Am J Sports Med. 2012 Sep
Morgan MD et al. Am J Sports Med. 2016 Feb

Recidive

Fattori di rischio

- Età <25
- Nuovo infortunio
- Tunnel
- Genetica



23% ↑



46%



49%



5%

Lai CCH et al., 2018



Return to **top-level** dopo ACL-Revision surgery

Wright RW et al., 2012

Le varie fasi



Take home message

- Percorso lungo e non semplice
- Ottima comunicazione tra atleta e staff
- Forza, Funzionalità, Prontezza Psicologica
- Non è solo una questione di tempo

