FRANCE RUGBY

RUGBY SCIENCE
A FRENCH PERSPECTIVE…

In 2009…

Romain 01/05/1999 (10)

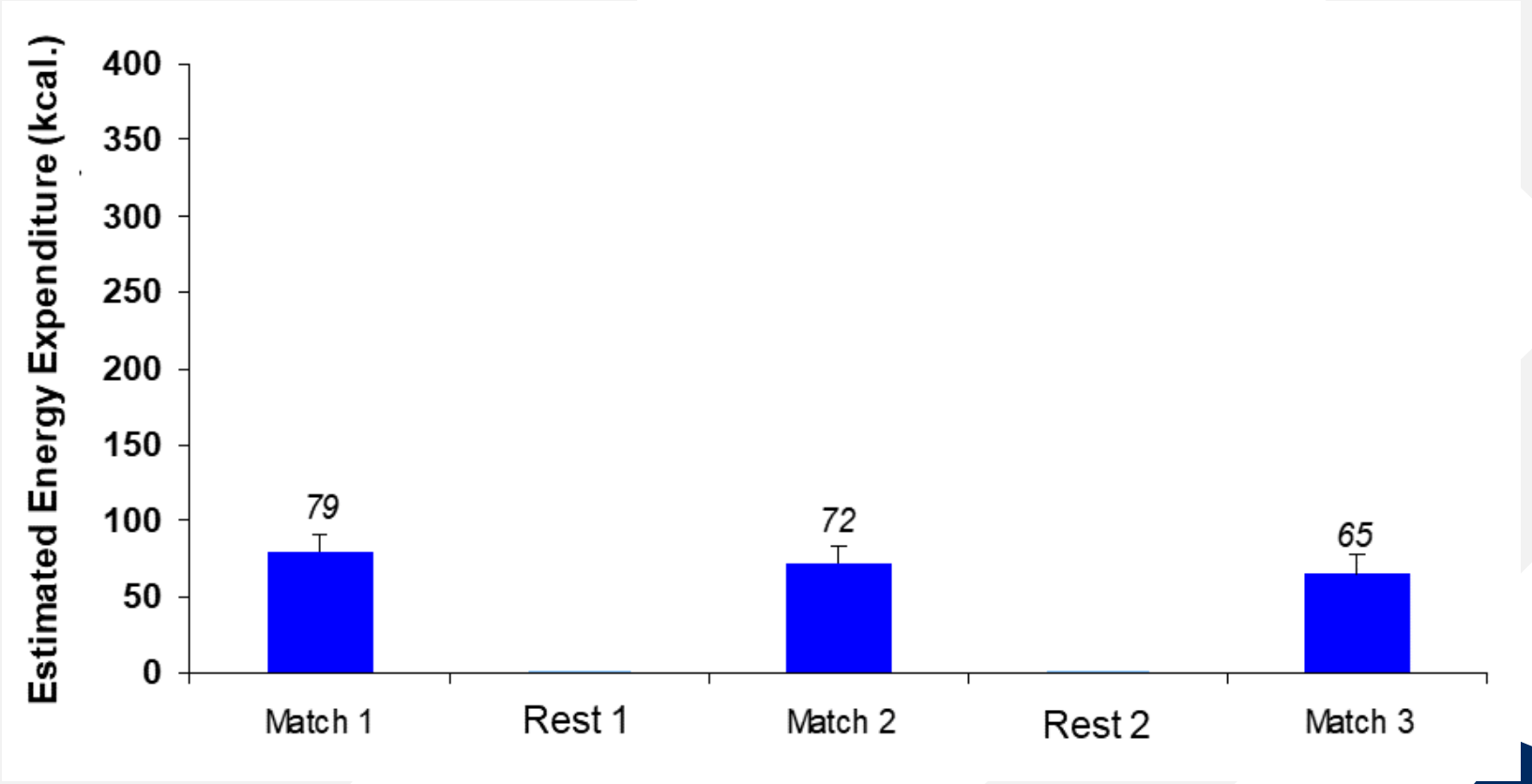
Melvyn 30/06/1999 (10)

Antoine 15/11/1996 (13)

Cameron 07/11/1998 (11)

« RUGBY SCHOOLS » (U6 – U14)

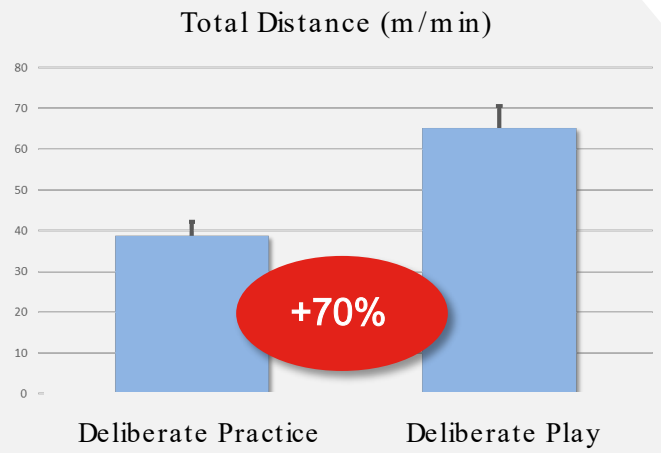
New game laws from the 2009/2010 season !

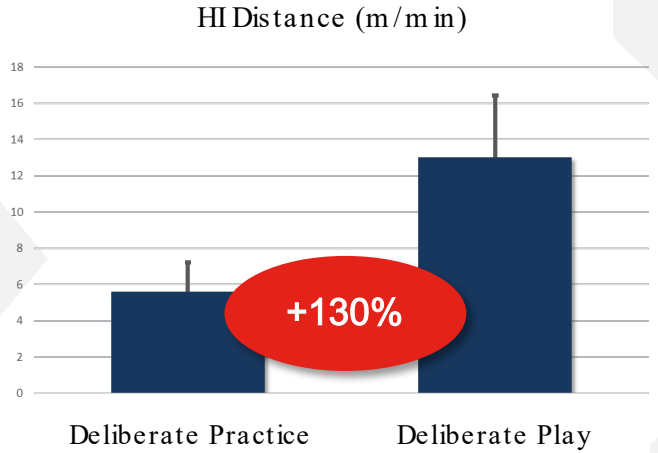


"One of my first scientific interventions in 2008…"

« RUGBY SCHOOLS » (U6 – U14)

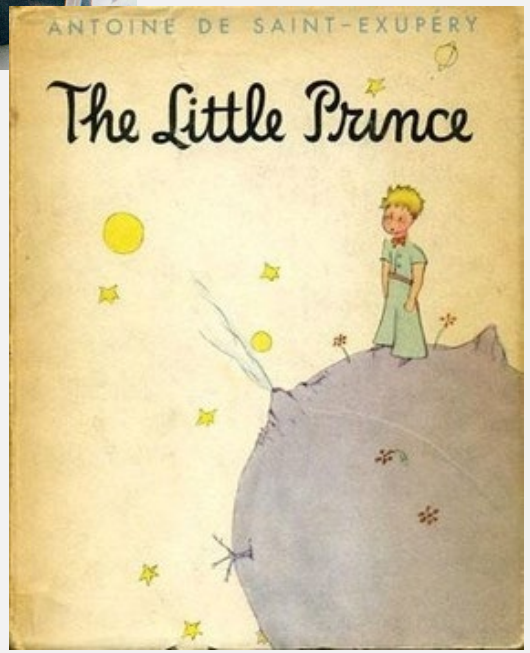
What does a young player actually do when he plays rugby ?





	Passes	Kicks	Rucks/Mauls
Deliberate Play *VS* Deliberate Practice (≈ match)	*+ 40%*	*+ 120%*	*- 13%*

« RUGBY SCHOOLS » (U6 – U14)



“the future, you don't have to predict it, but allow it”

A. DE SAINT EXUPERY

GAME SAFETY

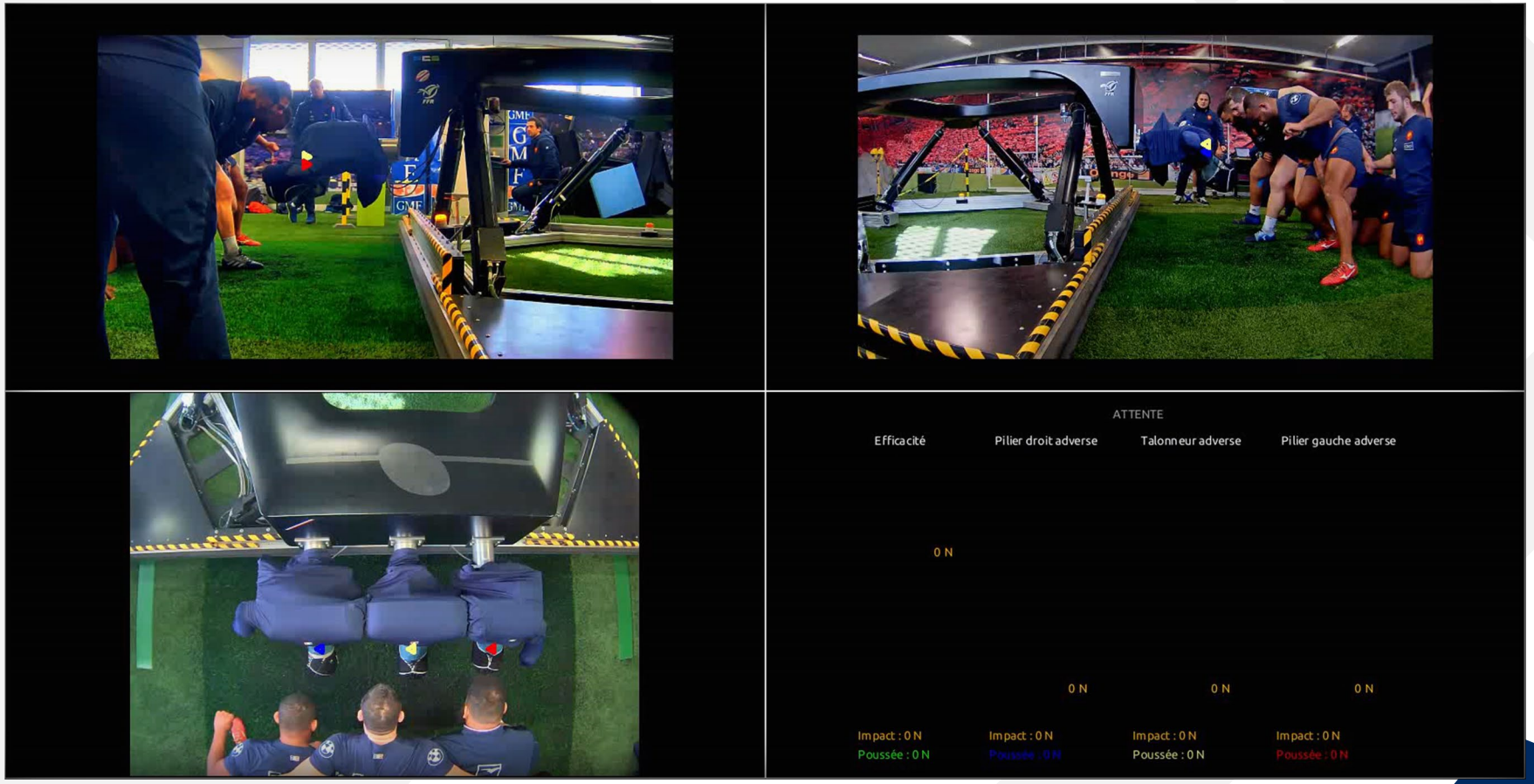
2009/2010 Season : a “sad” record of catastrophic injuries in France

COMITE	DATE	POSTE	NIVEAU	ÂGE	CIRCONSTANCE
Lyonnais	16/09/2009	/	Ecole de Rugby	13 ans	Plaquage
Bourgogne	21/10/2009	talonneur	Entraînement	16 ans	Maul effondré
Ile de France	14/11/2009	3ème ligne	Rugby Entreprise	36 ans	Percussion
Midi Pyrénées	07/02/2010	talonneur	Séries Territoriales	24 ans	Mêlée
Armagnac Bigorre	03/04/2010	talonneur	Reichel	20 ans	Mêlée
Ile de France	30/05/2010	talonneur	Challenge Séries Territoriales	29 ans	Mêlée
+ 2 autres...					

6 serious cervical spine injuries…
3 in scrum …

GAME SAFETY

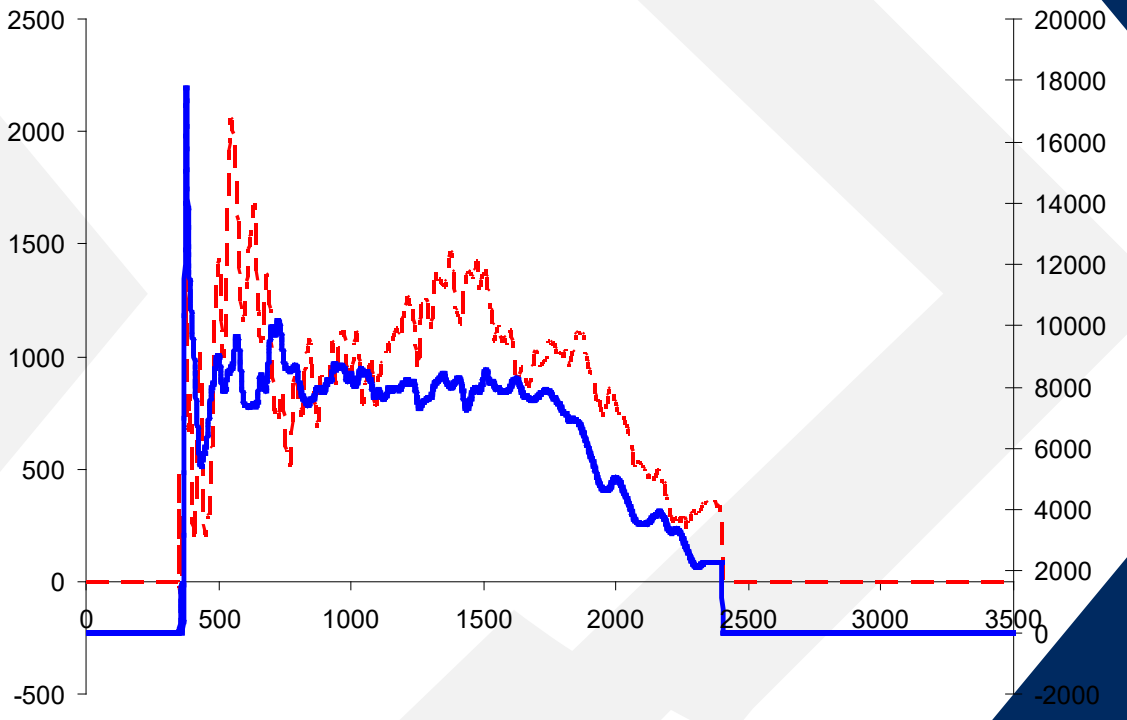
Scrum Biomechanics



The Scrum Simulator by Thales Group (2010)

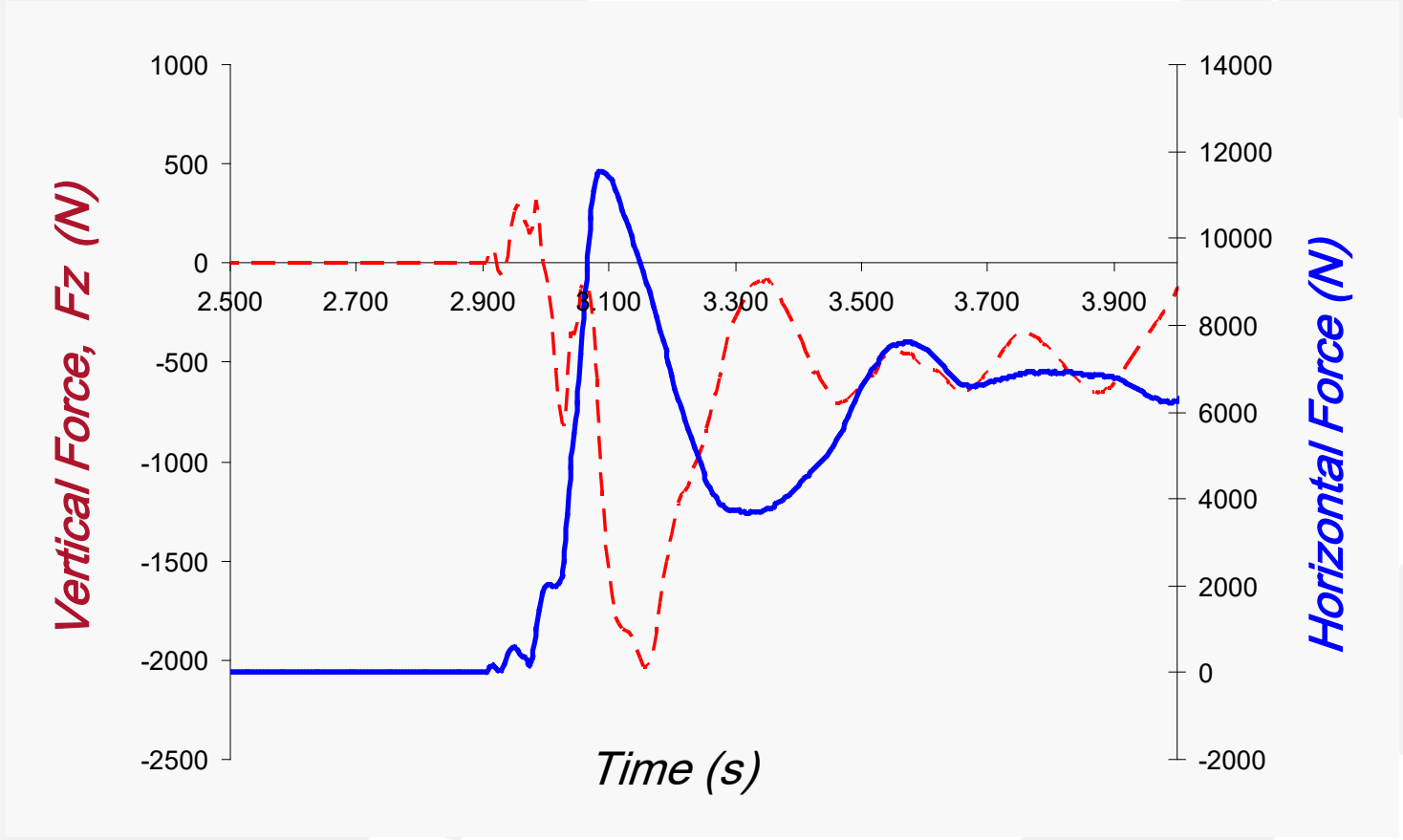
GAME SAFETY

Scrum Biomechanics



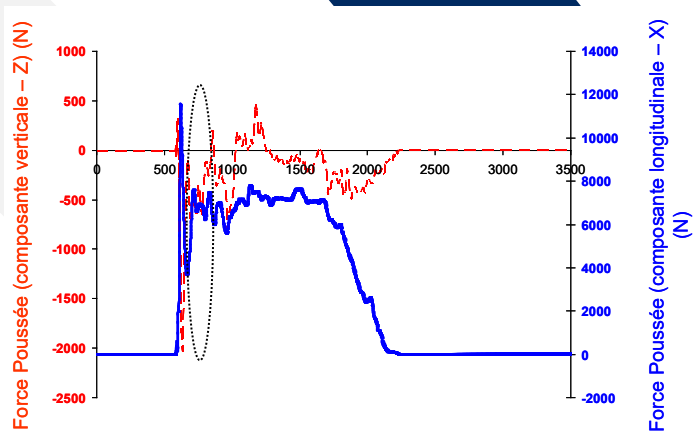
GAME SAFETY

Scrum Biomechanics

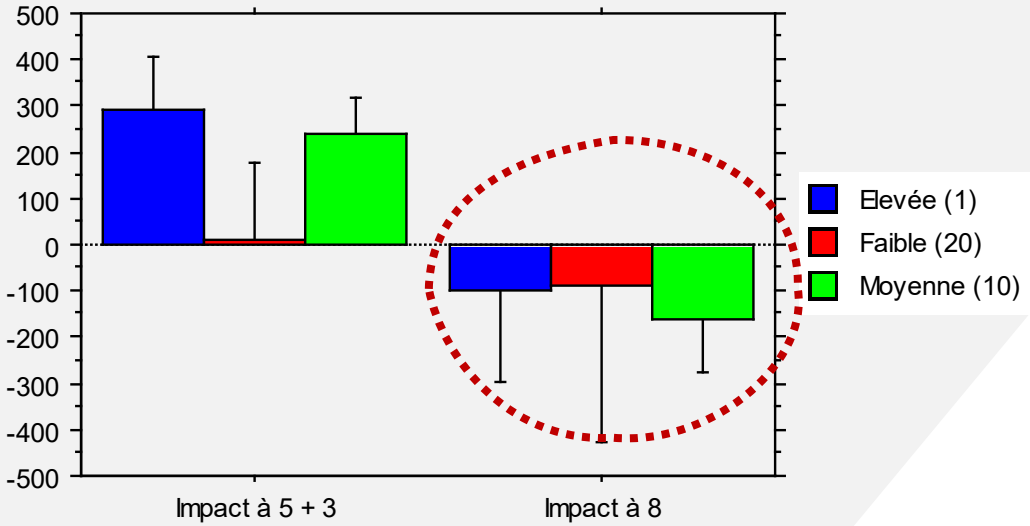


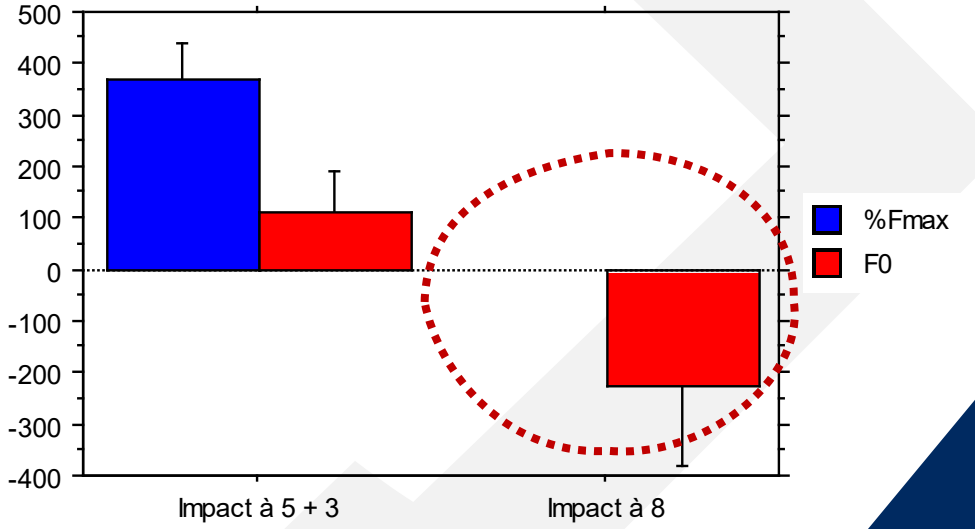
GAME SAFETY

Scrum Biomechanics



200ms Post Impact Force (N)
(vertical Force Fz)





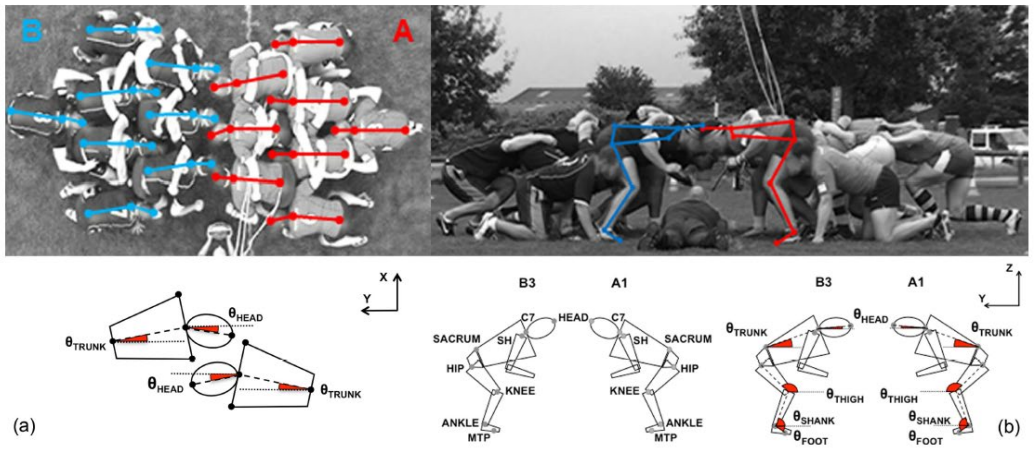
« **Type of engagement** » **Effect**
(8 vs 5+3 vs Placement (No Impact) → $p < 0.01$
Vertical Instability Effect → $p = 0.77$
Horizontal Force Effect → $p = 0.11$

GAME SAFETY

Scrum Biomechanics

A modified prebind engagement process reduces biomechanical loading on front row players during scrummaging: a cross-sectional study of 11 elite teams

Dario Cazzola,[1] Ezio Preatoni,[1] Keith A Stokes,[1] Michael E England,[1,2] Grant Trewartha[1]



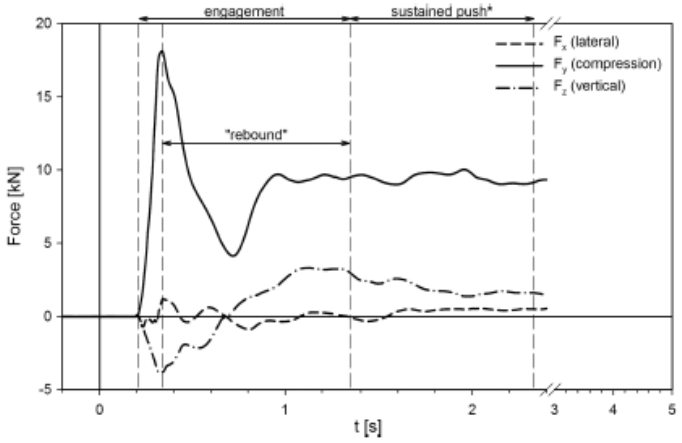


Figure 2 Characteristic force traces typical of those obtained from studies involving one forward pack scrummaging against an instrumented scrum machine, adapted from Preatoni *et al*.[15]

Engagement techniques and playing level impact the biomechanical demands on rugby forwards during machine-based scrummaging

Ezio Preatoni,[1] Keith A Stokes,[1] Michael E England,[1,2] Grant Trewartha[1]

GAME SAFETY

Effect of variation of scrum laws in amateur community rugby union (No Impact Engagement, No Scrum resetting)

Original article

Impact of the national prevention policy and scrum law changes on the incidence of rugby-related catastrophic cervical spine injuries in French Rugby Union

E Reboursiere,[1,2] Y Bohu,[2,3] D Retière,[2] B Sesboüé,[1] V Pineau,[1,4] J P Colonna,[5] J P Hager,[2,6] J C Peyrin,[2] J Piscione[2]

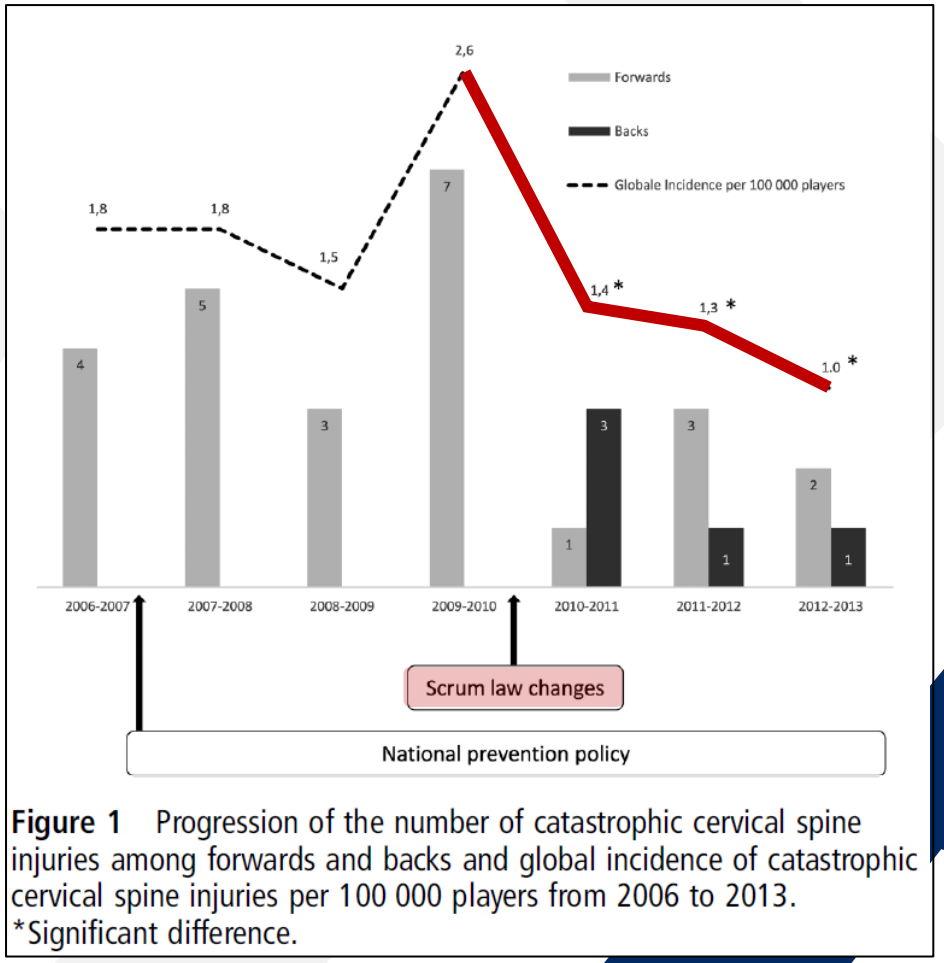


Figure 1 Progression of the number of catastrophic cervical spine injuries among forwards and backs and global incidence of catastrophic cervical spine injuries per 100 000 players from 2006 to 2013.
*Significant difference.

GAME SAFETY

Effect of variation of scrum laws in amateur community rugby union (No Impact Engagement, No Scrum Reset)

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Table 2 Comparison of number of catastrophic cervical spine injuries from 2006 to 2010 and from 2010 to 2013 according to playing position, playing activities and age

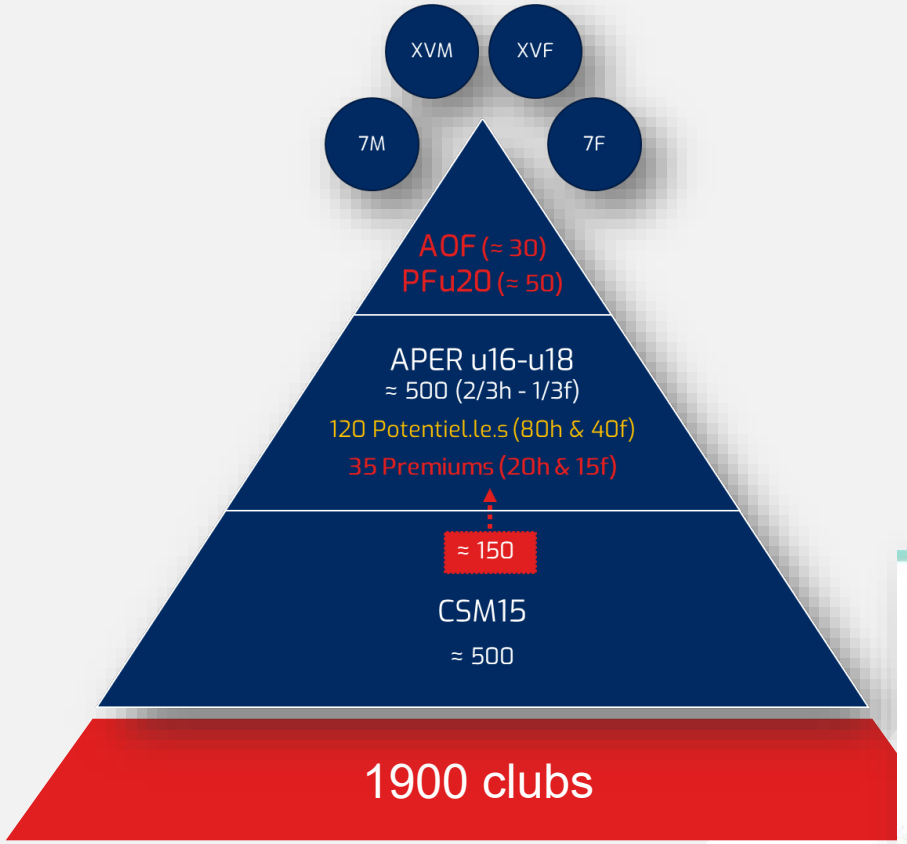
	2006–2010	2010–2013	Total	p Value*
Backs	0 (0%)	5 (100%)	5†	**0.003**
Forwards	19 (76%)	6 (24%)	25†	
Scrum	11 (92%)	1 (8%)	12	**0.020**
Other playing activities	9 (47%)	10 (53%)	19	
Seniors	17 (71%)	7 (29%)	24	0.210
Juniors	3 (43%)	4 (57%)	7	

*Fisher's exact test on the interaction effect.
†One missing injury for playing position.

« XV DE FRANCE » – MEN & WOMEN

OLYMPIC RUGBY SEVENS

YOUTH NATIONAL TEAMS



14 national youth teams or academies

SPORT SCIENCE & PERFORMANCE DEPARTMENT

THE REARBASE OF THE NATIONAL TEAMS

1

Support for all national team performance projects:

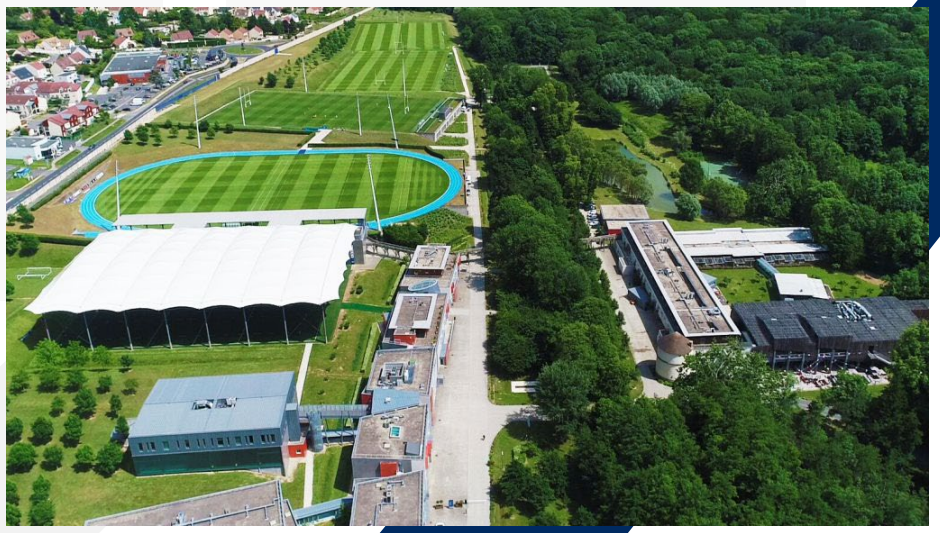
- **Human Resource provision** (S&C coaches, Perf. Analysts , Sport Scientists, Nutritionnists , Psychologists , Data Scientists, etc.),
- **Access to facilities , equipment , tools & methods ,**
- **Consulting.**

2

Carry out **Research and Development** programs to offer a competitive advantage to national teams or increase in player safety and welfare

3

Ensure **scientific and technological dissemination** as well as skills transfer to elite rugby and participate in the implementation of **professional education** .



National Rugby Centre
(Marcoussis, 24km from Paris)

SPORT SCIENCE & PERFORMANCE DEPARTMENT

THE REARBASE OF THE NATIONAL TEAMS

SPORT SCIENCE & PERFORMANCE DEPARTMENT

VIDEO Unit
O.Nouailles

PERFORMANCE ANALYSIS
V.Krischer Responsable Analyse Performance
N.Buffa / E.Urdampilleta / Q.Labit (XV France)
V.Péducasse (XV Féminin)
JB.Pascal (France 7)
(Germain Igarza) Entraîneur National Adjoint 7F /
B.Dedenis (France 7 Féminin)

+ 6 -7 External Experts

STRENGTH & CONDITIONING
T.Giroud / N.Jeanjean / E.Plaza / Q.Bernard (XV France)
A.Saboua / T. Debon (XV Féminin)
G.Boissard (France U20)
R.Ladauge (France U18 & APER)
J.Robineau (France 7)
M.Brick / A.Saboua (France 7 Féminin)

+ 4-5 External Experts

NUTRITION & RECOVERY Unit
E.Tiollier
(INSEP)
F.Mullie (PhD student)
M.Fabre
A.Aloulou

TRAINING & EDUCATION Department
S&C
Perf Analysis
Psychology support for Coaching

PSYCHOLOGY & STAFF SUPPORT
JM Bederede
M.Campo (Burgundy University)
Roberta Antonini Philippe

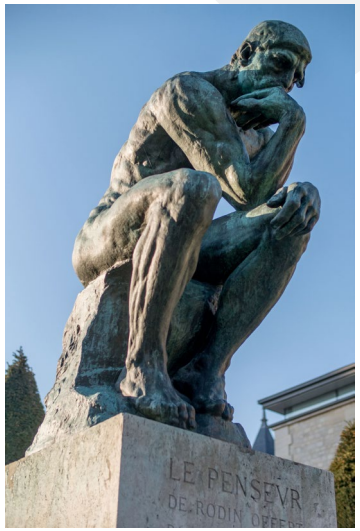
+ 3-4 External Experts

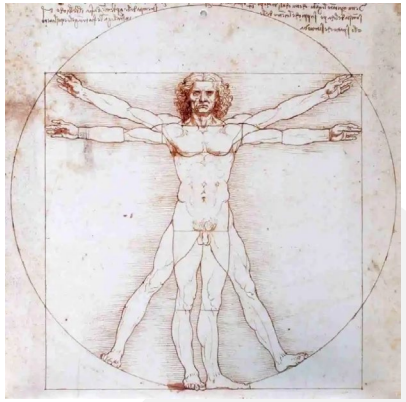
SPORT SCIENCE R&D
O.Chaplain (Chef de Projet R&D)
Q.Rinaldi (XV France)
B.Mathieu (France U20)
A.Peeters (France U18 & APER)
N.Lopez (France 7)

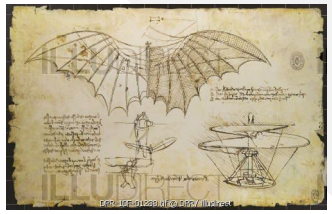
+ 5-6 External Experts

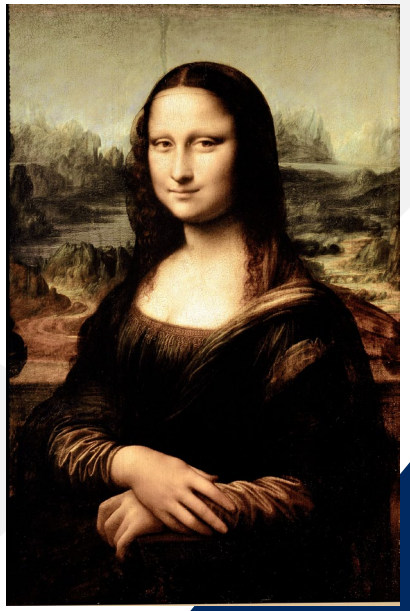
DATA Unit
J.Cheradame
N.Pinczon Du Sel
(PhD Student)

A SPORT PERFORMANCE: A WORK OF ART









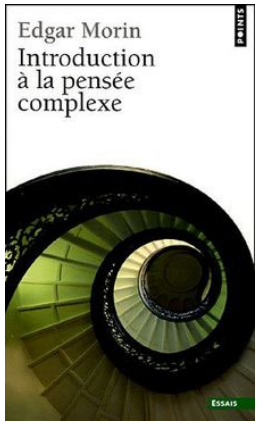
HIGH PERFORMANCE SPORT : ARTISANAL KNOW-HOW

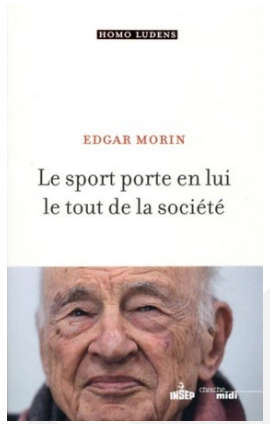
..SKILLED ARTISANS WHO THINK THROUGH AND WITH THEIR "MATERIALS"...

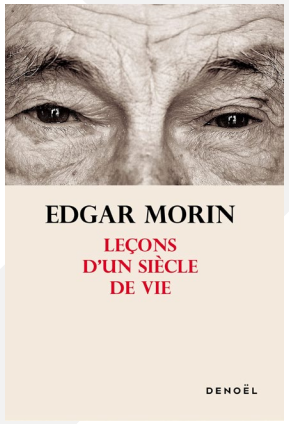
HIGH PERFORMANCE SPORT : ARTISANAL KNOW-HOW

..SKILLED ARTISANS WHO THINK THROUGH AND WITH THEIR "MATERIALS"...

> "La vie est une navigation dans un océan d'incertitudes à travers des archipels de certitudes."





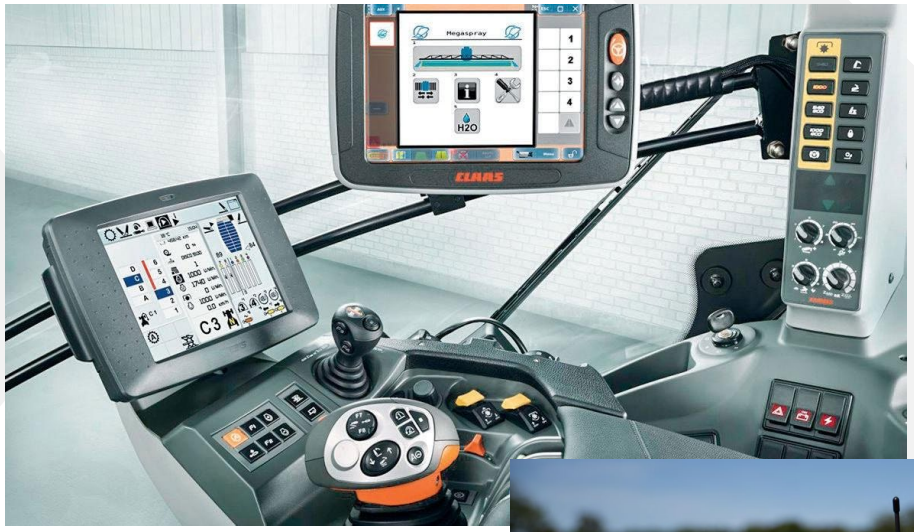


Sport Performance

" ~~life~~ is a navigation on a sea of uncertainties dotted with islands of certainties "

HIGH PERFORMANCE SPORT : ARTISANAL KNOW-HOW

..SKILLED ARTISANS WHO THINK THROUGH AND WITH THEIR "MATERIALS"...



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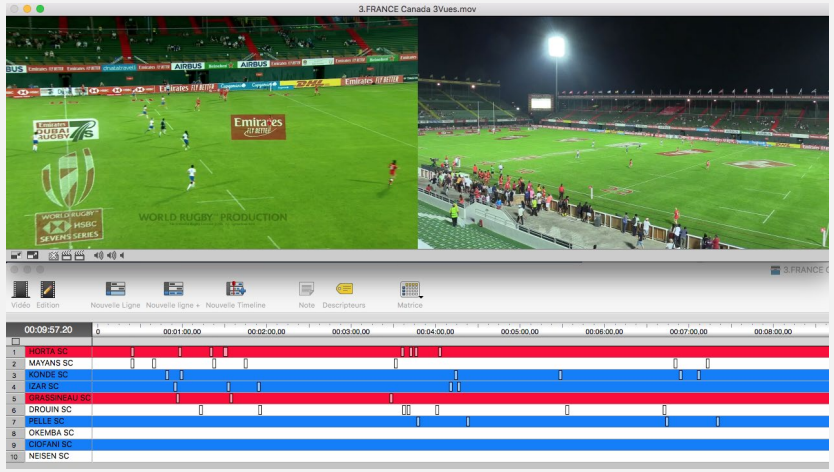
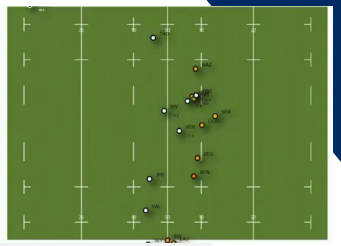
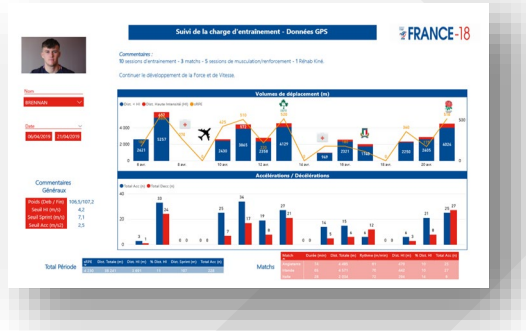






Sports Data Providers

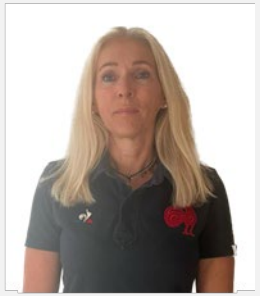
STATS PERFORM

EVIDENCE BASED PRACTICE…OUR DNA

Researchers, PhD, PhD Students, Engineer

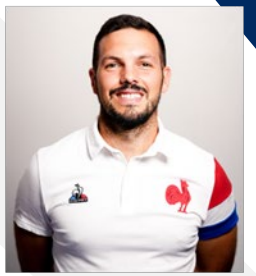




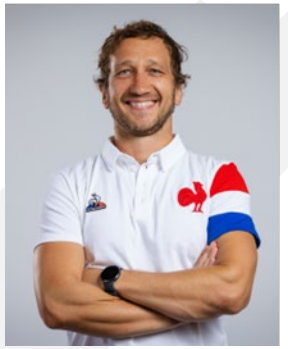



XV de France





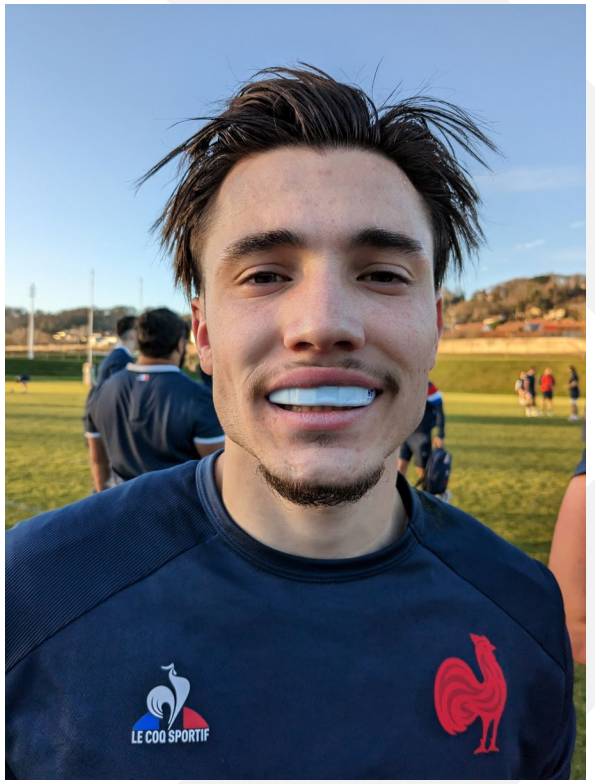




Other National Teams

CONTACT LOAD IN ELITE RUGBY

HEAD ACCELERATION EVENT (HAE)



“Extreme” thresholds (99 th Percentile)

PLA > 44g

PAA > 3500 radian/s²

PLV > 2,5 m/s

PAV 22 radian/s

7

Variable	Value
Peak Linear Acceleration	52 g
Peak Angular Acceleration	4700 rad/s ^{2}
Peak Linear Velocity	1,8 m/s
Peak Angular Velocity	13,7 rad/s

7

Variable	Value
Peak Linear Acceleration	21 g
Peak Angular Acceleration	3800 rad/s ^{2}
Peak Linear Velocity	0,6 m/s
Peak Angular Velocity	23,2 rad/s

8

Variable	Value
Peak Linear Acceleration	83 g
Peak Angular Acceleration	5300 rad/s ^{2}
Peak Linear Velocity	3,1 m/s
Peak Angular Velocity	38,6 rad/s

21

Variable	Value
Peak Linear Acceleration	89 g
Peak Angular Acceleration	6400 rad/s ^{2}
Peak Linear Velocity	4,4 m/s
Peak Angular Velocity	37,2 rad/s

CONTACT LOAD IN ELITE RUGBY

HEAD ACCELERATION EVENT (HAE)

Critical Thresholds

PLA > 44 g
PAA > 3500 radian/s²
PLV > 2,5 m/s
PAV > 22 radian/s

Equipe
U20

Saison
Tout

Periode
T6N

Critical HAE

Nom	Date	Local Time	PLA	PAA	PLV	PAV
B	28/01/2023	15:10:31	52,7	2679	3,5	10,9
B	28/01/2023	15:10:32	69,9	3862	2,5	14,0
B	28/01/2023	15:19:22	13,0	1269	1,3	27,5
C	03/02/2023	21:06:31	49,3	2140	3,1	8,7
C	27/01/2023	17:38:55	35,9	5301	1,9	20,8
C	28/01/2023	16:05:43	37,0	1697	2,8	13,2
C	03/02/2023	21:15:52	48,0	1158	2,6	15,6
C	20/02/2023	17:06:08	21,4	1400	2,3	22,0
C	20/02/2023	17:18:29	22,7	3674	1,4	19,4
C	20/02/2023	17:26:22	47,1	2291	3,1	21,1
C	03/02/2023	21:17:50	27,4	1402	2,7	7,9
C	03/02/2023	21:23:20	36,1	2736	2,8	12,4
C	20/02/2023	17:10:43	45,2	3229	2,3	11,8
C	20/02/2023	17:15:05	49,0	2223	3,4	9,7
D	28/01/2023	15:04:00	29,7	3560	1,5	13,4
D	28/01/2023	15:06:21	22,9	2533	2,1	28,5
F	28/01/2023	14:59:10	12,2	555	1,4	22,2
F	28/01/2023	14:59:29	16,7	1488	1,9	38,0
G	30/01/2023	16:45:21	50,4	2552	1,7	14,1
G	31/01/2023	12:22:45	40,0	1716	2,9	15,2
G	06/02/2023	11:23:38	38,7	1421	2,6	4,8
J	28/01/2023	15:13:05	40,2	679	2,8	7,7
J	28/01/2023	15:45:50	21,7	3503	0,7	7,1
J	03/02/2023	20:12:37	47,3	2077	2,6	8,3
L	06/02/2023	11:05:22	45,3	3534	1,4	7,9
L	06/02/2023	11:40:57	46,4	3774	1,6	13,1
N	03/02/2023	21:08:01	43,7	4127	1,9	14,8

CONTACT LOAD IN ELITE RUGBY

HEAD ACCELERATION EVENT (HAE)

CRITICAL VS NON CRITICAL HAE

Situation	Non Critical HAE	Critical HAE
Tackler	34 %	52,5 %
Carrier	13 %	25 %
Maul	23 %	12,5 %
Ruck	27 %	7,5 %
Collision (without ballon)	1 %	2,5 %
Line out	1 %	0 %
Scrum	1 %	0 %
Total	100 %	100%

Studied on Critical HAE in T6N23 matches, and on a sample of Non -Critical control HAE with the same Forwards/Backs distribution.

NECK INJURY & CONCUSSION PREVENTION

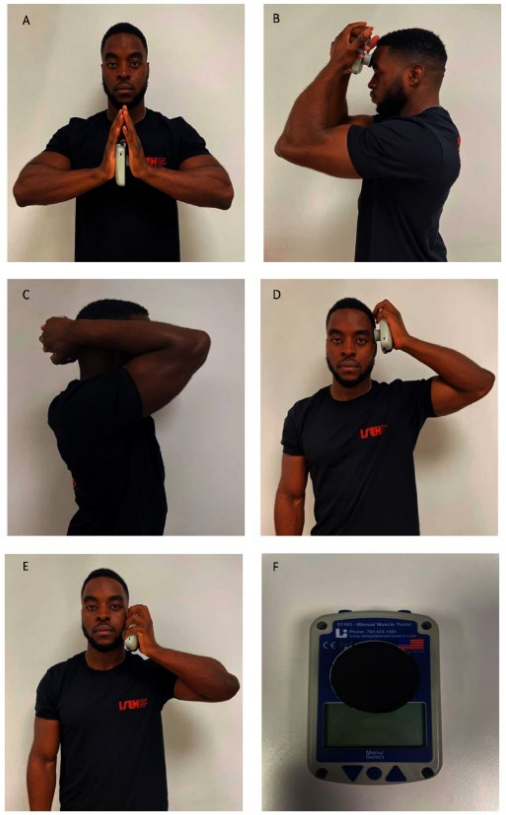


Figure 1 Test positions: HADD test (A),forward flexion (B),extension (C),side flexion (D),rotation (E) and handheld dynamometer (F). HADD, horizontal adduction.

Poor isometric neck extension strength as a risk factor for concussion in male professional Rugby Union players

Theo Farley [1,2] Ed Barry,[3] Richard Sylvester,[2,4] Akbar De Medici,[2] Mathew G Wilson [1,2]

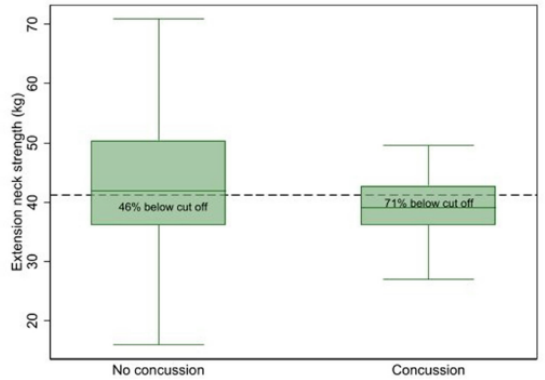


Figure 2 Box plot for neck strength—extension (kgf): Dashed line shows optimal cut-off point for concussion discrimination.

13% lower risk of sustaining a concussion for every 10% increase in cervical extension force

Players most at risk
Extension Force ⩽ 41 Kg

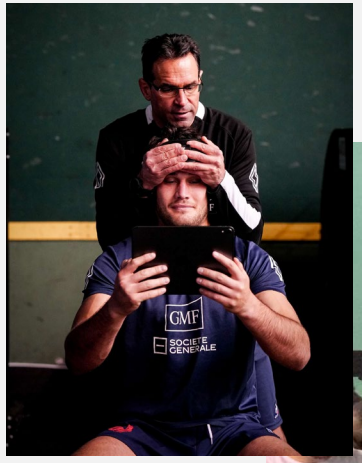
Table 3 Geometric mean baseline neck strength by concussion

Range	Players without concussion N=196	Players with concussion N=29	IRR* (95% CI) univariate	IRR† (95% CI) adjusted
Right rotation	24.6 (1.3)	24.7 (1.3)	1.00 (0.87 to 1.14) p=0.997	1.02 (0.87 to 1.20) p=0.77
Left rotation	25.2 (1.3)	25.0 (1.3)	1.01 (0.89 to 1.15) p=0.89	1.03 (0.94 to 1.12) p=0.55
Extension	42.5 (1.3)	38.2 (1.2)	0.87 (0.75 to 1.00) p=0.044	0.87 (0.78 to 0.98) p=0.019
Flexion	31.5 (1.3)	29.6 (1.3)	0.92 (0.79 to 1.06) p=0.23	0.94 (0.77 to 1.14) p=0.53
Right flexion	24.6 (1.3)	23.0 (1.2)	0.90 (0.78 to 1.04) p=0.14	0.91 (0.79 to 1.05) p=0.22
Left flexion	25.0 (1.3)	23.5 (1.2)	0.90 (0.78 to 1.04) p=0.16	0.92 (0.77 to 1.10) p=0.37
Total	174.7 (1.2)	166.0 (1.2)	0.92 (0.79 to 1.08) p=0.32	0.94 (0.80 to 1.12) p=0.50
Flexion:extension	0.74 (1.2)	0.78 (1.2)	1.13 (0.93 to 1.38) p=0.23	1.13 (0.97 to 1.33) p=0.13

*Incidence rate ratio for a 10% increase in each variable.
†Adjusted for age, club, BMI.
BMI, body mass index.

Farley T, *et al*. *Br J Sports Med* 2022;**0**:1–7. doi:10.1136/bjsports-2021-104414

NECK INJURY & CONCUSSION PREVENTION



NECK INJURY & CONCUSSION PREVENTION

Handheld dynamometer made available to all Elite clubs

« Acceptable » Performance U22 Men

	Front Row	Other Forwards	Backs
Extension (kgf)	45	40	35
Flexion (kgf)	30	26	23

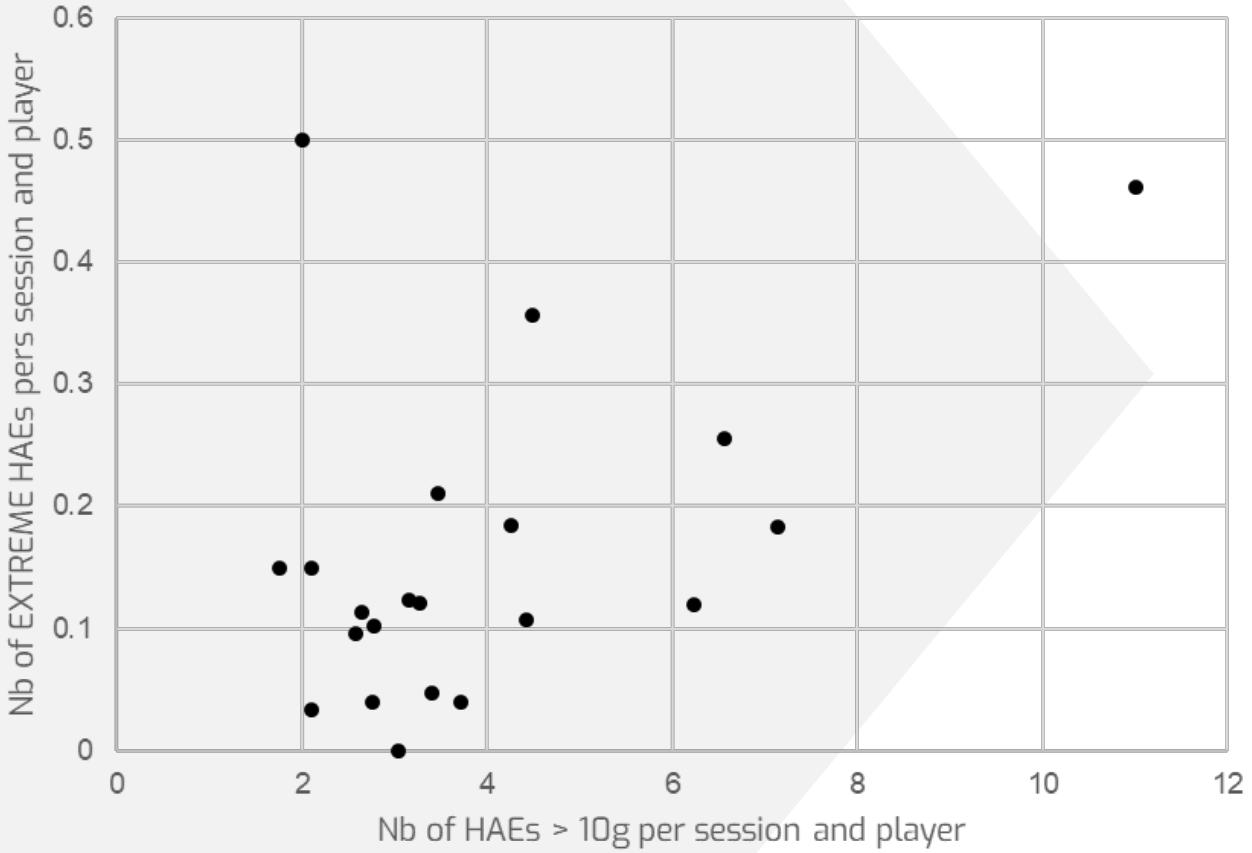
« Acceptable » Performance U18 Men

	1ère Ligne	AVT	TQ
Extension (kgf)	38	34	30
Flexion (kgf)	24	21	19

« Acceptable » Performance U18 Women

	1ère Ligne	AVT	TQ
Extension (kgf)	30	26	23
Flexion (kgf)	20	17	15

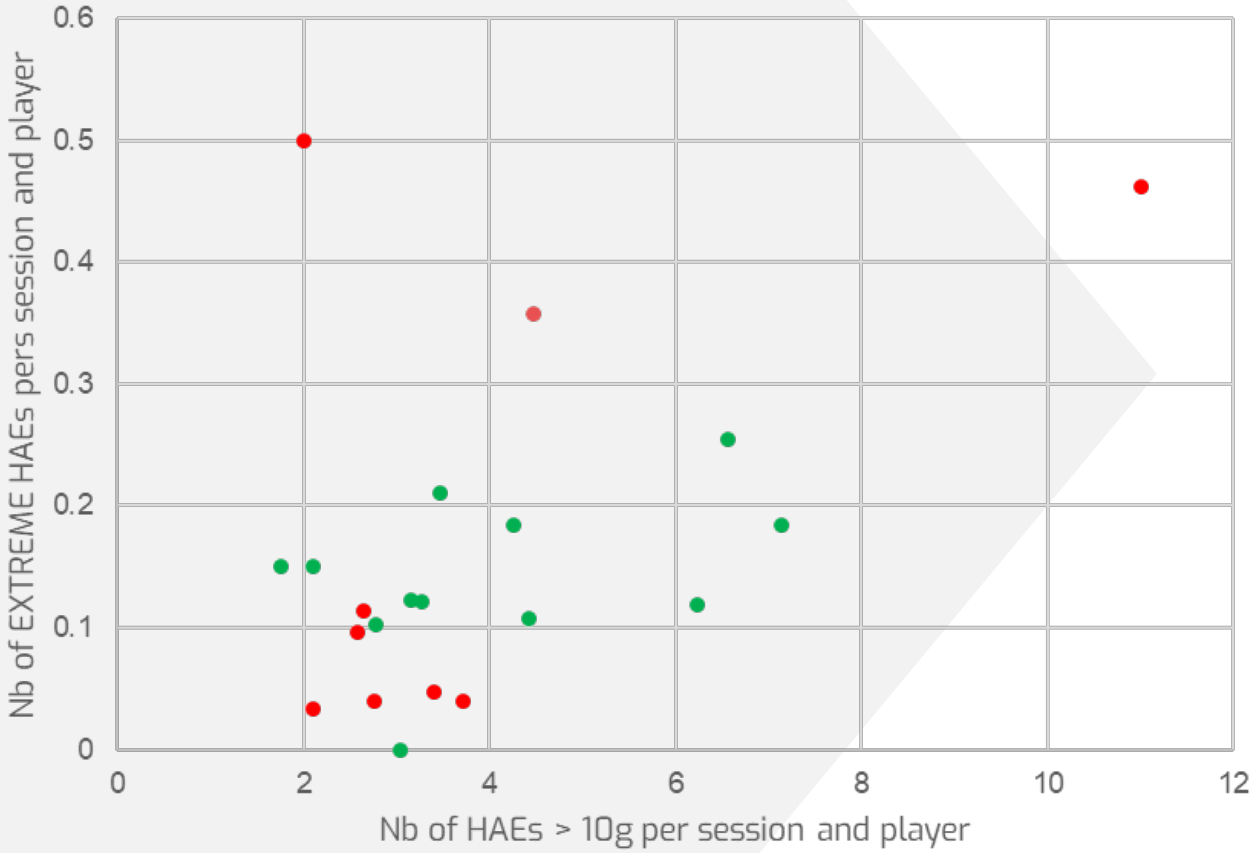
INTERNATIONAL FEMALE PLAYERS HAE EXPOSURE



A HAE is labelled « EXTREME » if:

- PLA > 44 g, or
- PAA > 3500 rad/s2, or
- PLV > 2,2 m/s, or
- PAV > 25 rad/s

INTERNATIONALFEMALE PLAYERSHAE EXPOSURE



Legend

Player is plotted red if tested below one of these thresholds (1st quartile)

	FLEX	EXT
Forward	14,4 kg	21,3 kg
Back	10,9 kg	17,1 kg

PLAYER LOAD GUIDELINES

LIMITATION TO 30 MATCHES / SEASON ?

Original research

The influence of match exposure on injury risk in elite men's rugby union

Sean Williams [a,*], Ella Kay [a], Richard Bryan [b], Mark Lambert [b], Matthew Cross [c], Stephen W. West [d,e], Simon Kemp [f,g], Keith A. Stokes [a,f]

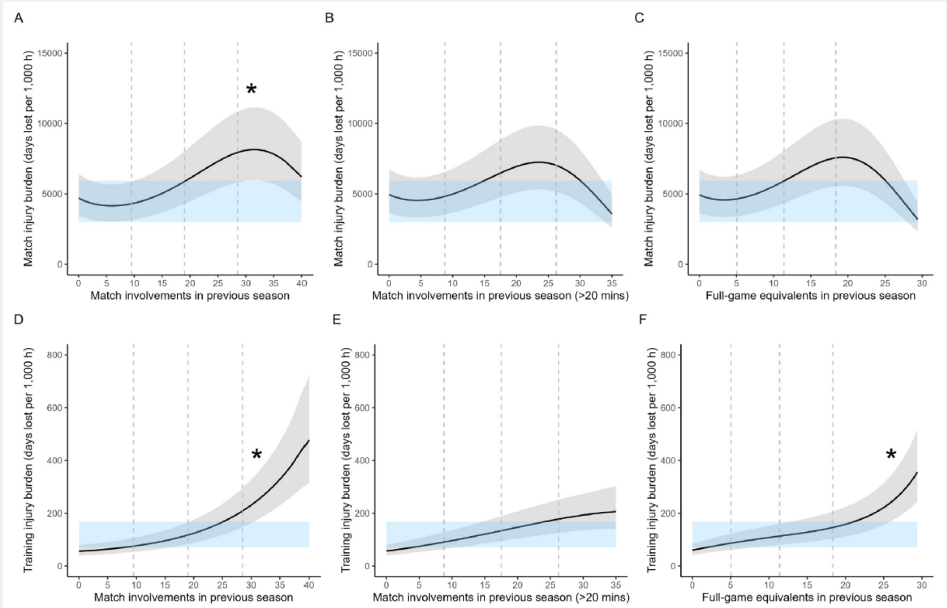
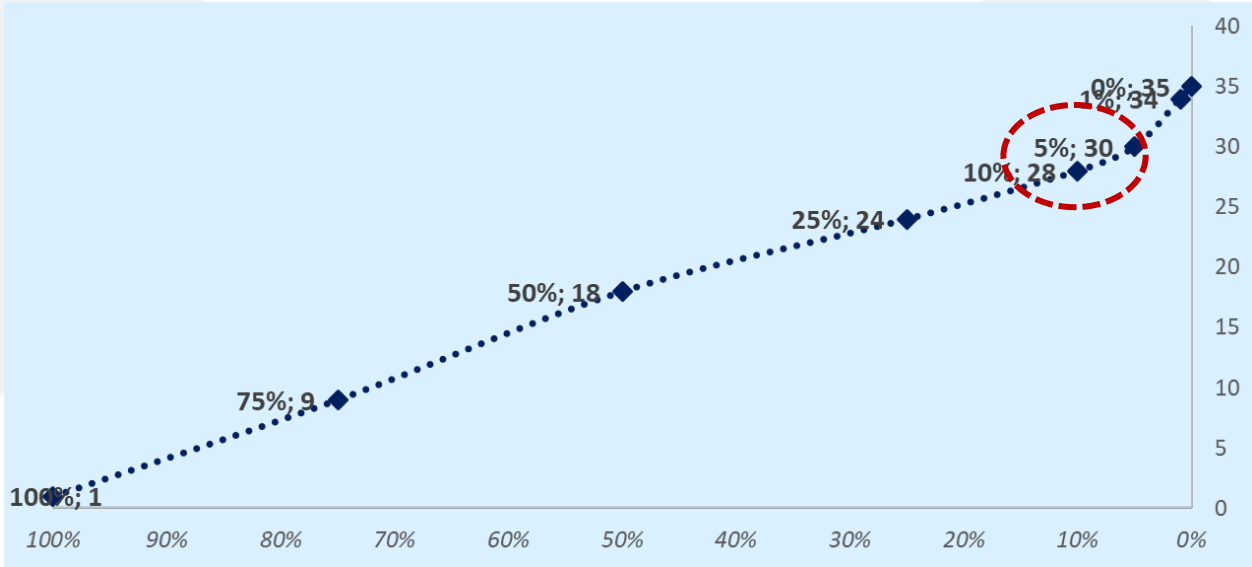


Fig. 3. Influence of match loads undertaken in the previous season upon match (A–C) and training (D–F) injury burden rates in the current season. The blue and grey shaded regions show the 95% confidence limits for the baseline injury risk and effect estimate, respectively. The dashed vertical lines represent the lower, median, and upper quartiles for each match load measure. * indicates a meaningful difference in injury risk.

Total Matches played by Top14 Players



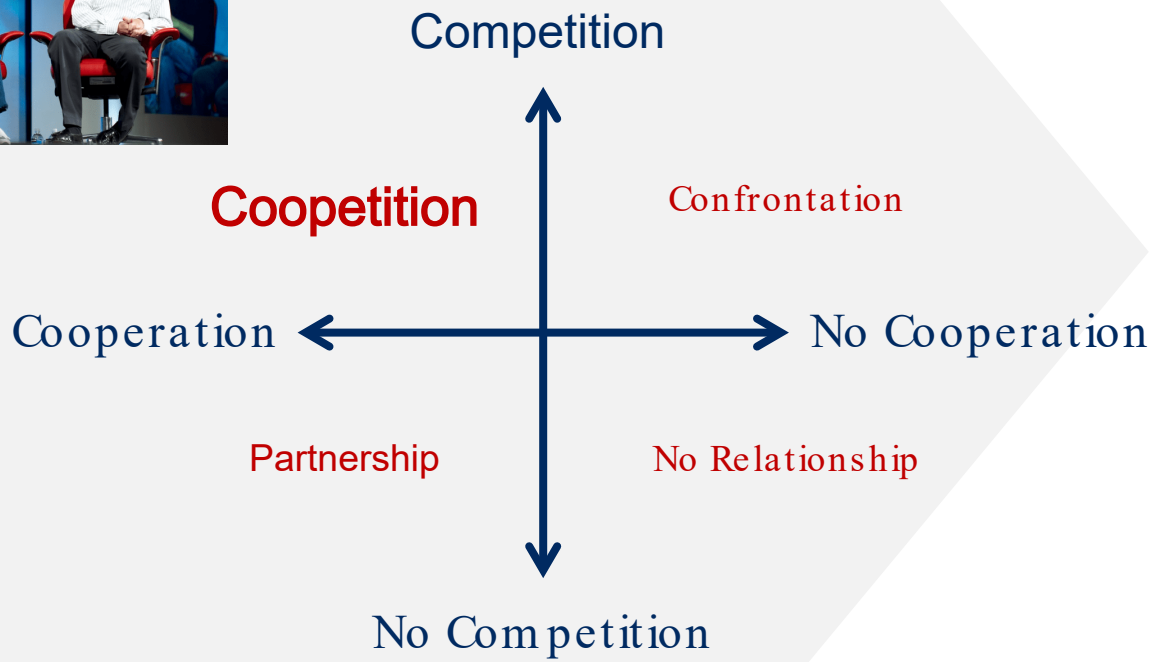
Top 14 Player Proportion

PLAYER LOAD GUIDELINES

DO WE NEED "STRICT" OR "SMART" MATCH NUMBER REGULATION ?

Full Name	Position	Team(s)	Tot Minute	Tot Games Playe	Total Contacts
Brian Alainu'uese	Lock	RC Toulon	2304	35	980
Alexandre Roumat	Flanker	Stade Toulousain	2162	35	926
Finn Russell	Outside Half	Racing 92	2388	35	473
Gregory Alldritt	Number 8	Stade Rochelais	2314	34	1300
Richie Arnold	Lock	Stade Toulousain	1943	34	997
Dany Priso	Prop	RC Toulon	1455	34	638
Uini Atonio	Prop	Stade Rochelais	1589	34	634
Antoine Gibert	Outside Half	Racing 92	1280	34	213
Reda Wardi	Prop	Stade Rochelais	1492	33	835
Peato Mauvaka	Hooker	Stade Toulousain	1367	33	674
Ultan Dillane	Lock	Stade Rochelais	1545	33	635
Jiuta Wainiqolo	Right Wing	RC Toulon	2417	33	576
Setariki Tuicuvu	Full Back	CA Brive	2431	33	575
Anthony Belleau	Outside Half	ASM Clermont Auvergne	1528	33	339
Will Skelton	Lock	Stade Rochelais	2004	32	1131
Romain Sazy	Lock	Stade Rochelais	1383	32	802
Dorian Aldegheri	Prop	Stade Toulousain	1654	32	763
Janick Tarrit	Hooker	Racing 92	1374	32	744
Quentin Lespiaucq	Hooker	Stade Rochelais	1210	32	672
Ulupano Seuteni	Left Centre	Stade Rochelais	2235	32	543
Julien Marchand	Hooker	Stade Toulousain	1581	31	1067
Emmanuel Meafou	Lock	Stade Toulousain	1939	31	872
Beka Gigashvili	Prop	RC Toulon	1569	31	786
Maxime Lamothe	Hooker	Union Bordeaux-Begles	1519	31	770
Yoram Moefana	Left Centre	Union Bordeaux-Begles	2145	31	658
Baptiste Chouzenoux	Flanker	Racing 92	1833	31	648
Antoine Dupont	Scrum Half	Stade Toulousain	2206	31	545
Matthis Lebel	Left Wing	Stade Toulousain	2323	31	455
Antoine Hastoy	Outside Half	Stade Rochelais	2157	31	323
Leo Barre	Left Centre	Stade Francais Paris	1694	31	292
Ihaia West	Outside Half	RC Toulon	1805	31	265
Sebastien Bezy	Scrum Half	ASM Clermont Auvergne	1496	31	261

SHARED (UNION - CLUBS) MONITORING SYSTEM FOR PROFESSIONAL RUGBY PLAYERS

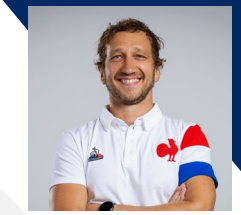


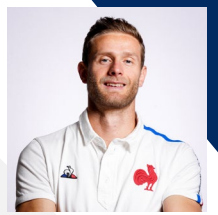
Coopetition: cooperation among competitors to enhance applied research and drive innovation in elite sport

Carlos Ramírez-López [1,2,3] Kevin Till,[1,4] Andy Boyd,[5] Mark Bennet,[6,7] Julien Piscione,[8] Sam Bradley,[9,10] Pierosario Giuliano,[11] Cedric Leduc,[1] Ben Jones[1,2,4,12,13]

"Within coopetition, organisations can **compete** due to conflicting interests, and at the same time, **cooperate** due to a common interest in developing specific knowledge"

SHARED (UNION - CLUBS) MONITORING SYSTEM FOR PROFESSIONAL RUGBY PLAYERS



FFR

LIGUE NATIONALE RUGBY

CATAPULT

TOP 14 RUGBY

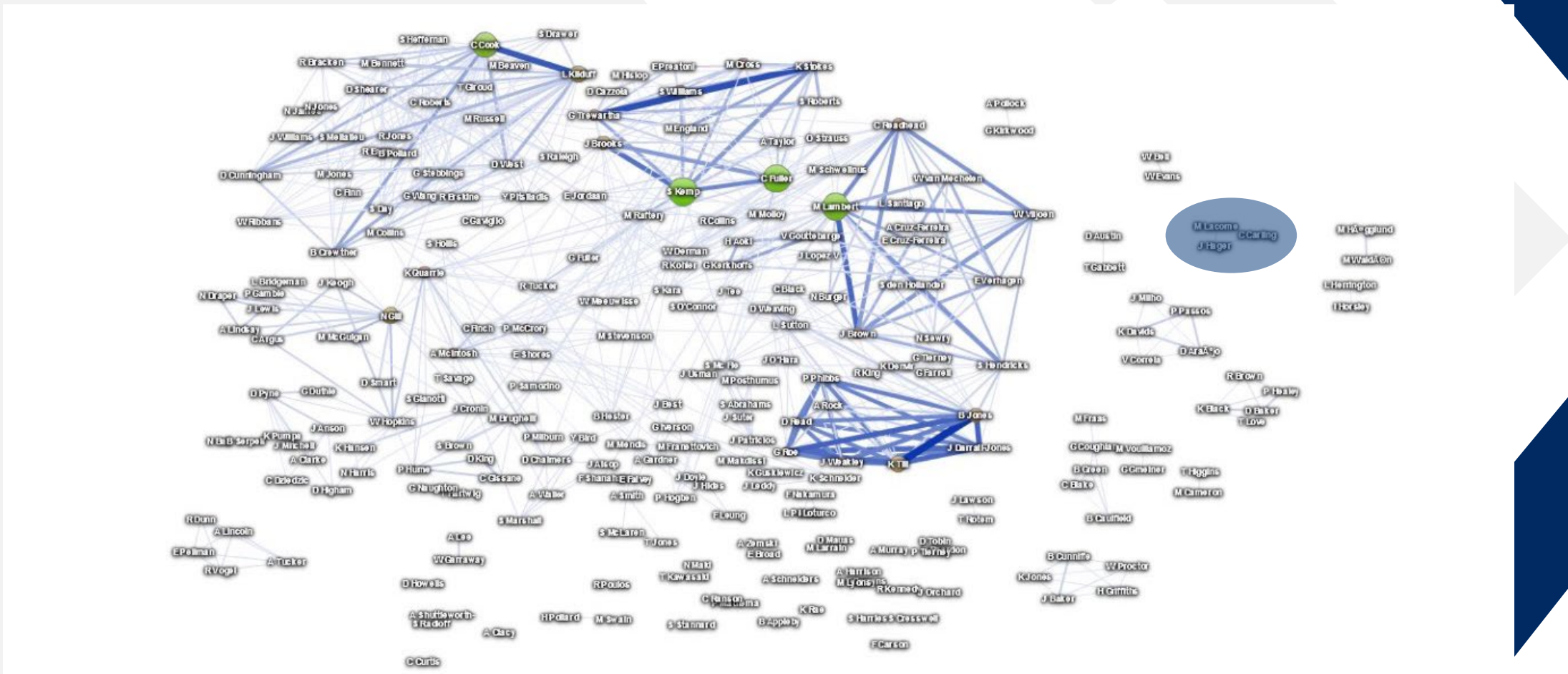
- ASM CLERMONT AUVERGNE
- AVIRON BAYONNAIS RUGBY PRO
- CLUB ATHLÉTIQUE BRIVE CORRÈZE LIMOUSIN
- CASTRES OLYMPIQUE
- LYON OLYMPIQUE UNIVERSITAIRE RUGBY
- MONTPELLIER HÉRAULT RUGBY
- RACING 92
- RUGBY CLUB TOULONNAIS
- SECTION PALOISE BÉARN PYRÉNÉES
- STADE FRANÇAIS PARIS
- STADE ROCHELAIS
- STADE TOULOUSAIN RUGBY
- SPORTING UNION AGEN LOT-ET-GARONNE
- UNION BORDEAUX-BÈGLES

PRO D2 RUGBY

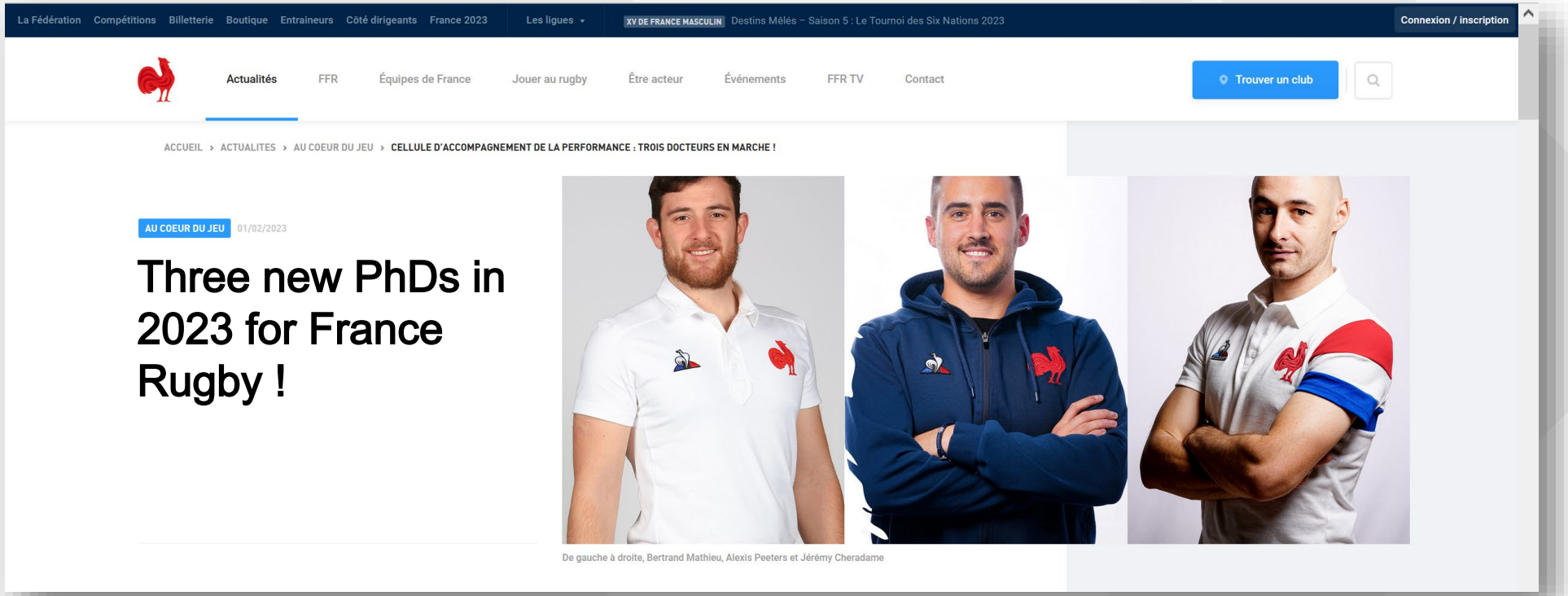
- ASSOCIATION SPORTIVE BÉZIERS HÉRAULT
- BIARRITZ OLYMPIQUE PAYS BASQUE
- US COLOMIERS RUGBY PRO
- F.C. GRENOBLE RUGBY
- OYONNAX RUGBY
- PROVENCE RUGBY SASP
- RUGBY CLUB VANNES
- ROUEN NORMANDIE RUGBY
- SA XV CHARENTE RUGBY
- STADE AURILLACOIS CANTAL AUVERGNE
- STADE MONTOIS RUGBY
- UNION SPORTIVE CARCASSONNAISE
- UNION SPORTIVE MONTALBANAISE
- UNION SPORTIVE ARLEQUINS PERPIGNAN
- SASP USON RUGBY PLUS
- VALENCE ROMANS DRÔME RUGBY

RESEARCH & DEVELOPMENT IN FRENCH RUGBY

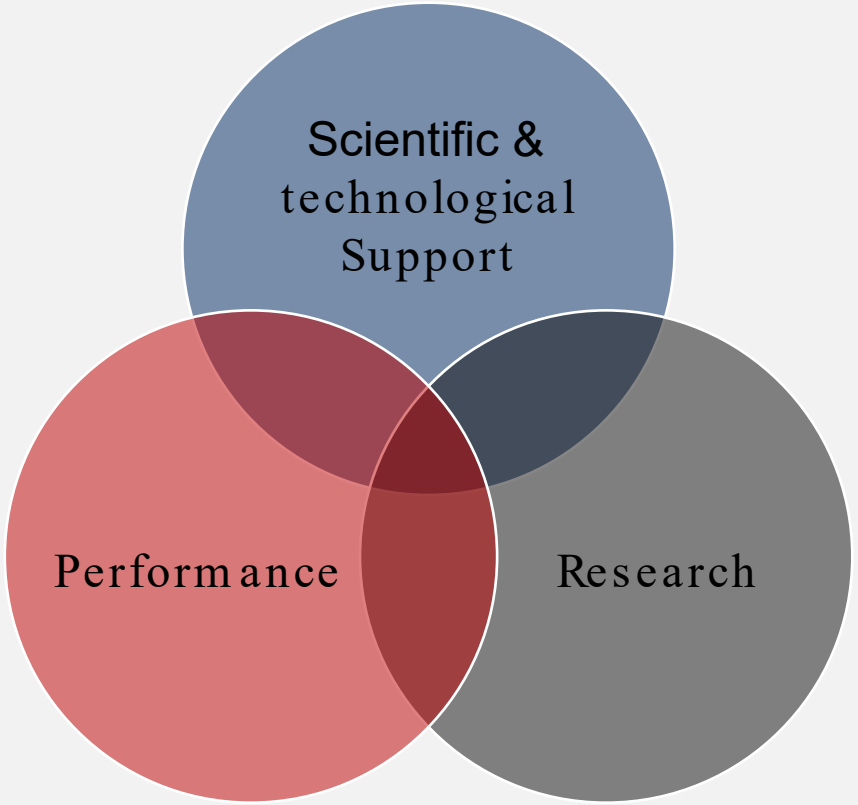
PubMed Rugby Union publication networks 1990 -2018 – pubs >= 3, co-pubs >= 2



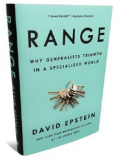
RESEARCH & DEVELOPMENT IN FRENCH RUGBY



RESEARCH & DEVELOPMENT IN FRENCH RUGBY



PhD or PhD student
at France Rugby
≈ R&D Engineer



POLYMATH

Industrial Research Training Contract

(created to promote integration of PhDs into private sector)

Contract between a company (employer), a PhD student (employe) & a laboratory

Public funding → Net Cost for employer

≈10 k€ / year

Research Tax Credit

30% tax credit for any research expense

40% tax credit for any public research institute

200% tax credit for the first employment contract (of indefinite duration) of a PhD

RESEARCH & DEVELOPMENT IN FRENCH RUGBY

60+ PUBLICATIONS

Rugby Injury & Prevention

Incidence and Risk Factors in Concussion Events

A 5-Season Study in the French Top 14 Rugby Union Championship

Jérémy Chéradame,*† MS, Julien Piscione,† PhD, Christopher Carling,† PhD, Jean-Pierre Guinoiseau,‡ MD, Bernard Dufour,§ MD, Hélène Jacqmin-Gadda,‖ PhD,

...ench Rugby Federation, Marcoussis, France

Impact of the national prevention policy and scrum law changes on the incidence of rugby-related catastrophic cervical spine injuries in French Rugby Union

E Reboursiere,[1,2] Y Bohu,[2,3] D Retière,[2] B Sesboüé,[1] V Pineau,[1,4] J P Colonna,[5] J P Hager,[2,6] J C Peyrin,[2] J Piscione[2]

Original article

Inconsistent anticipatory postural adjustments (APAs) in rugby players: a source of injuries?

...Pierre-Paul Vidal[1,8]

Sports related injuries in female rugby athletes: An epidemiological study of the French Rugby Union

A. Calcar [a], J.-P. Hager [b], R. Delaitre [c], J. Deloire [c], R. Loursac [b]

What Is the Impact of Physical Effort on the Diagnosis of Concussion?

Xavier Dechambre, MD,* Christopher Carling, PhD,† Ségolène Mrozek, MD, PhD,‡ Fabien Pillard, MD, PhD,§ Philippe Decq, MD, PhD,¶ Julien Piscione, PhD,‖ Antoine Yrondi, MD, PhD,** and David Brauge, MD††

Physical & Technical Demands (U18, U20, Sevens, Women)

Original Paper DOI: https://doi.org/10.5114/biolsport.2022.1

A comparison of running and contact loads in U18 and U20 international rugby union competition

AUTHORS: Alexis Peeters[1,2], Julien Piscione[2,3], Mathieu Lacome[4,5], Christopher Carling[6], Nicolas Babault[1,7]

[1] INSERM UMR1093-CAPS, Université Bourgogne Franche-Comté, UFR des Sciences du Sport, F-21000, Dijon
[2] Performance Department, Fédération Française de Rugby (FFR), Marcoussis, France
[3] University of Evry, University of Paris Saclay, Evry, France
[4] Performance and Analytics Department, Parma Calcio 1913, Parma, Italy

International Journal of Sports Physiology and Performance, 2023, 18, 1004-1011
https://doi.org/10.1123/ijspp.2023-0124
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Human Kinetics
ORIGINAL INVESTIGATION

Peak Running Demands in Elite Women's Rugby Sevens and Rugby Union Match Play: A Comparative Study

Anthony Couderc,[1] Mathieu Lacome,[2] Jeremy Cheradame,[1] Christopher Carling,[3,4] and Julien Piscione[1]

[1]Department of Research, French Rugby Federation (FFR), Marcoussis, France; [2]Department of Performance and Analytics, Parma Calcio 1913 Football Club, Parma, Italy; [3]FFF Research Center, French Football Federation, Clairefontaine National Football Center, Clairefontaine-en-Yvelines, France; [4]Laboratory of Sport, Expertise and Performance, French Institute of Sport (INSEP), Paris, France

International Journal of Sports Physiology and Performance, 2018, 13, 1059-1066
https://doi.org/10.1123/ijspp.2017-0464
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Human Kinetics
ORIGINAL INVESTIGATION

Workload, Fatigue, and Muscle Damage in an Under-20 Rugby Union Team Over an Intensified International Tournament

...athieu Lacome, Christopher Carling, Jean-Philippe Hager, Gerard Dine, and Julien P...

...opher Carling
...0002-7456-3493

RESEARCH ARTICLE

Exposure time, running and skill-related performance in international u20 rugby union players during an intensified tournament

Christopher J. Carling[1,2], Mathieu Lacome[2]*, Eamon Flanagan[3], Pearse O'Doherty[4], Julien Piscione[2]

1 Institute of Coaching and Performance, University of Central Lancashire, Preston, United Kingdom, 2 Research Department, French Rugby Union, Marcoussis, France, 3 Irish Rugby Football Union, Fitness Department, Dublin, Ireland, 4 Statsports Technologies™, Newry, Northern Ireland

* mathlacome@gmail.com

Evolution of the physical characteristics of the French women's rugby players: A 10-year longitudinal analysis by position and team

Sébastien Imbert[a,c], Julien Piscione[b], Anthony Couderc[c], Hélène Joncheray[c] and Frédéric N. Daussin[a,*]

Movement Patterns and Metabolic Responses During an International Rugby Sevens Tournament

Anthony Couderc, Claire Thomas, Mathieu Lacome, Julien Piscione, Julien Robineau, Rémi Delfour-Peyrethon, Rachel Borne, and Christine Hanon

Training - S&C

"Road to Rio": A Case Study of Workload Periodization Strategy in Rugby-7s During an Olympic Season

Julien Robineau[1], Bruno Marrier[2], Yann Le Meur[2], Julien Piscione[1], Alexis Peeters[1] and Mathieu Lacome[3]*

Integrating Strength and Power Development in the Long-Term Athletic Development of Young Rugby Union Players: Methodological and Practical Applications

Alexandre Durguerian, PhD,[1,2] Julien Piscione, PhD,[1] Bertrand Mathieu, MSc,[1] and Mathieu Lacome, PhD[1,3]
[1]Performance Department, French Rugby Federation, Marcoussis, France; [2]French Cycling Federation, Montigny Bretonneux, France; and [3]Performance Department, Paris Saint-Germain Football Club, Saint-Germain-en-Laye, France

Concurrent Validity and Reliability of Sprinting Force–Velocity Profile Assessed With GPS Devices in Elite Athletes

Pauline Clavel,[1,2] Cedric Leduc,[3,4] Jean-Benoît Morin,[5] Cameron Owen,[3,6] Pierre Samozino,[7] Alexis Peeters,[8] Martin Buchheit,[2,9,10,11] and Mathieu Lacome[2,12]

[1]Performance Department, Paris Saint-Germain FC, Saint-Germain-en-Laye, France; [2]French Institute of Sport (INSEP), Laboratory of Sport, Expertise and Performance (EA 7370), Paris, France; [3]Carnegie Applied Rugby Research Centre, Institute for Sport, Physical Activity and Leisure, Carnegie School of Sport, Beckett University, Leeds, United Kingdom; [4]Sport Science and Medicine Department, Crystal Palace Football Club, Beckenham, United Kingdom; [5]Laboratoire Interuniversitaire de Biologie de la Motricité, EA 7424, Université Lyon, UJM-Saint-Etienne, Saint-Etienne, France; [6]Leeds Rhinos Netball Club, Leeds, UK; [7]Laboratoire Interuniversitaire de Biologie de la Motricité, EA 7424, Université Savoie Mont Blanc, Chambéry, France; [8]Research Department, French Rugby Federation, Marcoussis, France; [9]HIIT Science, Revelstoke, BC, Canada; [10]Institute for Health and Sport, Victoria University, Melbourne, VIC, Australia; [11]Performance Research Intelligence Initiative, Dublin, Ireland; [12]Performance and Analytics Department, Parma Calcio 1913, Parma, Italy

Supercompensation Kinetics of Physical Qualities During a Taper in Team-Sport Athletes

Bruno Marrier, Julien Robineau, Julien Piscione, Mathieu Lacome, Alexis Peeters, Christophe Hausswirth, Jean-Benoît Morin, and Yann Le Meur

Hematological Adaptations Following a Training Camp in Hot and/or Hypoxic Conditions in Elite Rugby Union Players

Julien D. Périard,[1,2] Olivier Girard,[2,3] Nathan Towns... Mohammed Ihsan,[2] Mathieu Lacome,[7,8] David Nichol... Julien Piscione,[7] and Seba...

[1]Research Institute for Sport and Exercise, University of Canberra, Canberra, ACT, Australia; [2]Aspetar, Orthopaedic and Sports Medicine Hospital, Doha, Qatar; [3]School of Human Sciences (Exercise and Sp...; [4]College of Health and Life Sciences, Hamad Bin Khalifa University, Doha, Qatar; [5]Departme...; [6]Alliance for Research in Exercise, Nutrition and Activity (ARENA), University of South Aus...; Expertise and Performance, French Institute of Sports (INSEP), Paris, France; [8]De...; [9]Space Medicine Team, European Astronaut Center, Köln, Germany; [10]Institute of Sport, ...

Concurrent Training Programming: The Acute Effects of Sprint Interval Exercise on the Subsequent Strength Training

Bertrand Mathieu [1,2], Julien Robineau [1], Julien Piscione [1] and Nicolas Babault [2,*]

Recovery & Nutrition

nutrients MDPI

Article

Effects of Native Whey Protein and Carbohydrate Supplement on Physical Performance and Plasma Markers of Muscle Damage and Inflammation during a Simulated Rugby Sevens Tournament: A Double-Blind, Randomized, Placebo-Controlled, Crossover Study

Marina Fabre [1,2,*], Bertra...
Julien Robineau [2], Julien ...
Amandine Ligneul [6] and ...

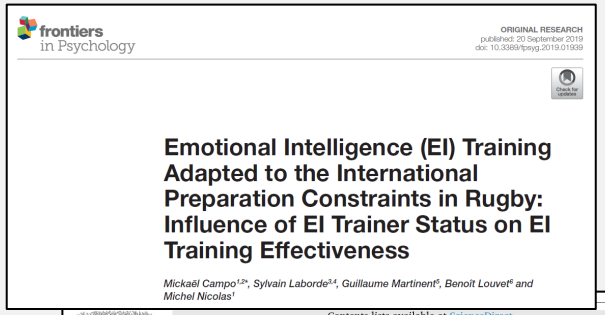
Effect of an Innovative Mattress and Cryotherapy on Sleep after an Elite Rugby Match

ANIS ALOULOU[1], CÉDRIC LEDUC[2], FRANÇOIS DUFOREZ[3,4], JULIEN PISCIONE[5], JEREMY CHERADAME[5], FRANÇOIS BIEUZEN[6], CLAIRE THOMAS[1,7], MOUNIR CHENNAOUI[4,8], PASCAL VAN BEERS[4,8], and MATHIEU NEDELEC[1]

RESEARCH & DEVELOPMENT IN FRENCH RUGBY

60+ PUBLICATIONS

Psychology


frontiers in Psychology

ORIGINAL RESEARCH
published: 20 September 2019
doi: 10.3389/fpsyg.2019.01939

Emotional Intelligence (EI) Training Adapted to the International Preparation Constraints in Rugby: Influence of EI Trainer Status on EI Training Effectiveness

Mickaël Campo[1,2], Sylvain Laborde[3,4], Guillaume Martinent[5], Benoît Louvet[6] and Michel Nicolas[1]*


Contents lists available at ScienceDirect

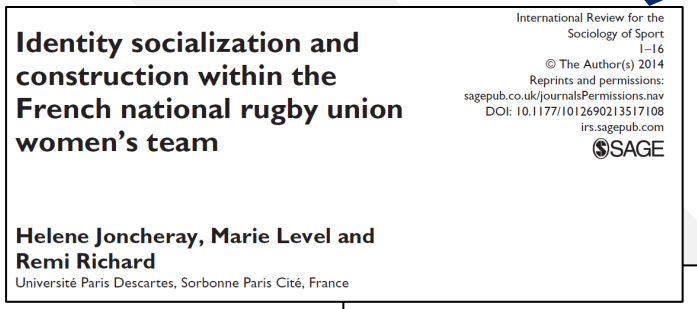
Psychology of Sport & Exercise

journal homepage: www.elsevier.com/locate/psychsport

Dimensions of social identification with the team as predictors of the coach-created training climate in rugby: A group-actor partner interdependence modelling perspective

Mickaël Campo [a, b, *], Benoît Louvet [c], Sofiene Harabi [a]

Sociology


Identity socialization and construction within the French national rugby union women's team

International Review for the Sociology of Sport
1–16
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DOI: 10.1177/1012690213517108
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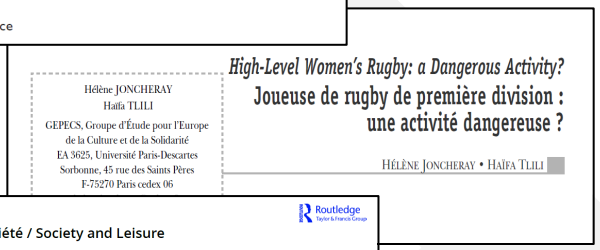
Helene Joncheray, Marie Level and Remi Richard
Université Paris Descartes, Sorbonne Paris Cité, France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Haïfa TLILI
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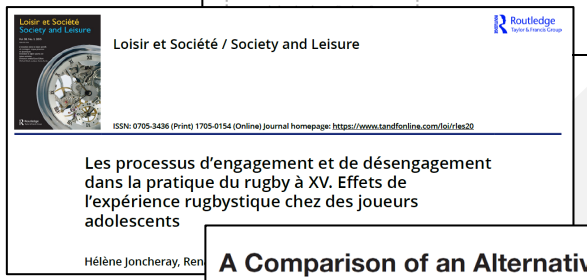
High-Level Women's Rugby: a Dangerous Activity?

Joueuse de rugby de première division : une activité dangereuse ?

HÉLÈNE JONCHERAY • HAÏFA TLILI


Loisir et Société / Society and Leisure

ISSN: 0705-3436 (Print) 1705-0154 (Online) Journal homepage: https://www.tandfonline.com/loi/rles20

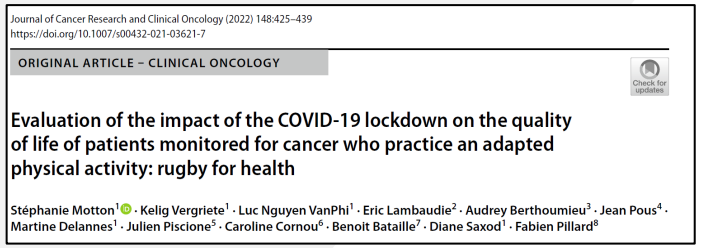
Les processus d'engagement et de désengagement dans la pratique du rugby à XV. Effets de l'expérience rugbystique chez des joueurs adolescents

Hélène Joncheray, Ren

"Rugby is Medicine"


Effect of "Touch Rugby" Training on the Cardiovascular Autonomic Control In Sedentary Subjects

Authors: C. Filliau[1], M. Younes[2], A.-L. Blanchard[1], J. Piscione[3], A. Van de Louw[4], C. Seguret[5], J. Israel[2], F. Cottin[1,2]
Affiliations: Affiliation addresses are listed at the end of the article

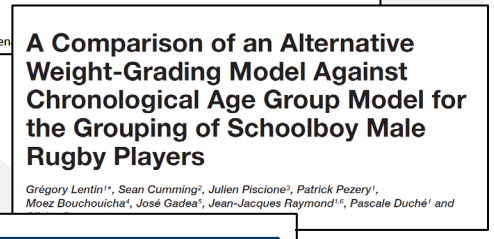

Journal of Cancer Research and Clinical Oncology (2022) 148:425–439
https://doi.org/10.1007/s00432-021-03621-7

ORIGINAL ARTICLE – CLINICAL ONCOLOGY

Evaluation of the impact of the COVID-19 lockdown on the quality of life of patients monitored for cancer who practice an adapted physical activity: rugby for health

Stéphanie Motton[1] · Kelig Vergriete[1] · Luc Nguyen VanPhi[1] · Eric Lambaudie[2] · Audrey Berthoumieu[3] · Jean Pous[4] · Martine Delannes[1] · Julien Piscione[5] · Caroline Cornou[6] · Benoit Bataille[7] · Diane Saxod[1] · Fabien Pillard[8]

Youth


A Comparison of an Alternative Weight-Grading Model Against Chronological Age Group Model for the Grouping of Schoolboy Male Rugby Players

Grégory Lentin[1], Sean Cumming[2], Julien Piscione[3], Patrick Pezery[1], Moez Bouchouicha[4], José Gadea[5], Jean-Jacques Raymond[1,6], Pascale Duché[1] and*


ORIGINAL RESEARCH ARTICLE — Open Access

A Cross-Sectional Study Assessing the Contributions of Body Fat Mass and Fat-Free Mass to Body Mass Index Scores in Male Youth Rugby Players

Olivier Gavarry[1*], Gregory Lentin[2], Patrick Pezery[1], Anne Delextrat[3], Guillaume Chaumet[4], Alain Boussuges[2] and Julien Piscione[5]

RESEARCH & DEVELOPMENT IN FRENCH RUGBY

NATIONAL RESEARCH PROGRAMS

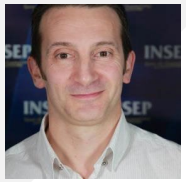
Olympic Research Program « Performance 2024 »

TEAM SPORTS
SOCIAL SCIENCES FOR PERFORMANCE

FFBB FFvolley FFHANDBALL FFR

« MANAGE THE SENSE OF US-NESS»

TEAM DYNAMICS AS A KEY FACTOR FOR COLLECTIVE PERFORMANCE



FRENCH RUGBY SCIENCE NETWORK

Professional Clubs and Province Rugby Unions

Strategic Support
(Scientific project, Funding, Student recruitment, etc.)

Clubs / Research Organisations Connections

Communication
("Sciences & Rugby" Days, Webinars, Master Class, etc.)

RESEARCH & DEVELOPMENT IN FRENCH RUGBY

PhD Project: Promotion of well being and positive youth development through the practice of rugby

Two main projects

WB & PYD IN RUGBY SCHOOLS (PREPAR)

- Young players (aged 10 to 15 years)
- Training coaches to foster an environnement conducive to PYD and WB

Identifying crucial coaches skills → Implementing the program → Designing a training program → Testing the effects of the program

WB & PYD IN RUGBY ACADEMIES (PEHM)

- Young elite players (aged 16 to 18 years)
- Assessing the extent to which psychosocials skills developed through mental training in Academies contribute to WB and PYD

Comparing the amount of mental training received and the improvement of players WB and PYD → Identifying appropriate measurement tools to assess mental training

ANNUAL SCIENCE & RUGBY SEMINARS/ WEBINARS

My Rugby PhD in 7'

https://www.youtube.com/watch?v=7eIcs8qj -IU

Nutritional Support for Elite Rugby Players

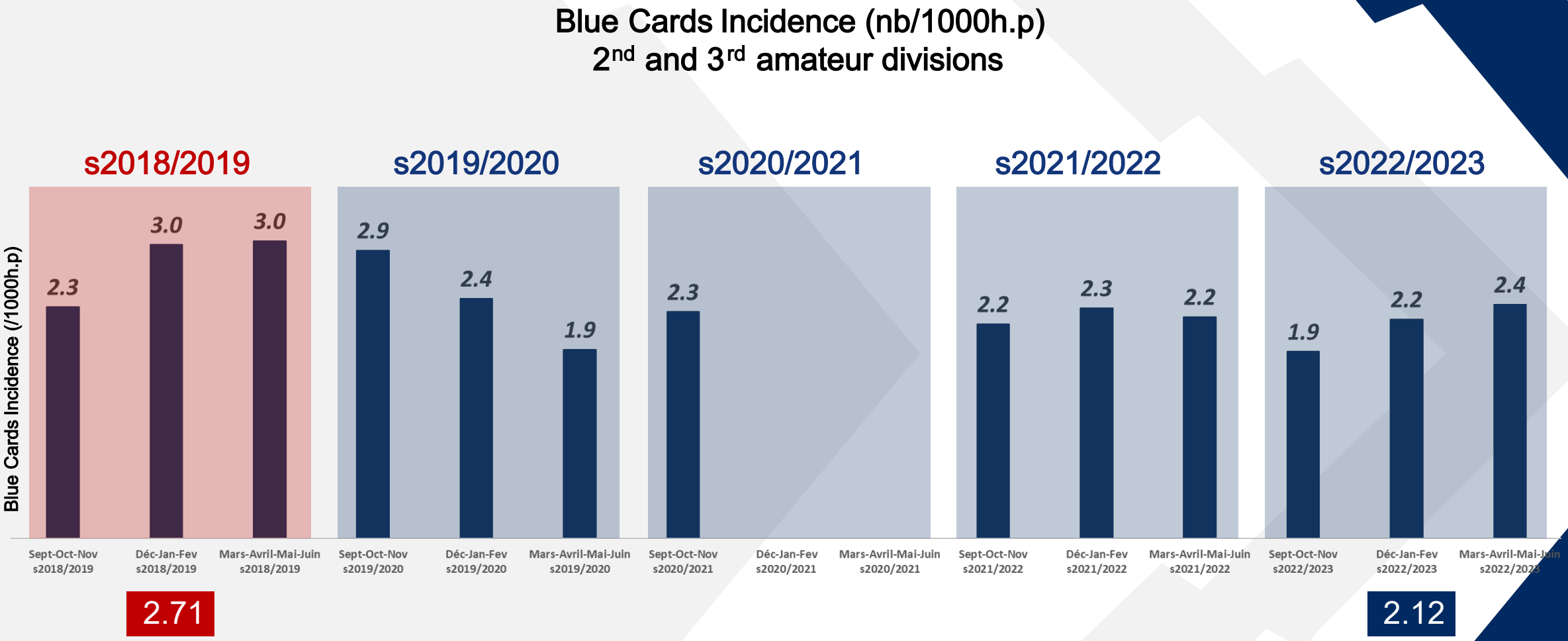
https://www.youtube.com/watch?v=mqKrsuSDYSo

TACKLE LAW TRIAL

Following the **World Rugby Symposium** in March 2019, the French Rugby Union presented a proposal to test new tackle laws adopted by World Rugby.

1. **Below the waist**
2. **Ball carrier not allowed to dip into contact**
3. **No double tackles allowed**

TACKLE TRIAL & BLUE CARDS (SUSPECTED CONCUSSION)



THE FRENCH PERSPECTIVE OF RUGBY SCIENCE !

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« Allégorie des trois tailleurs de pierre »

“Allegory of the three stonemasons”

Saint André Cathedral (Bordeaux)