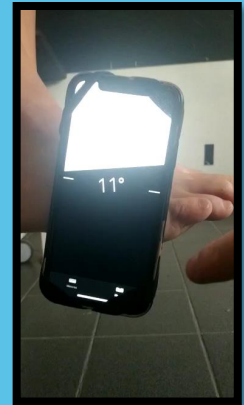
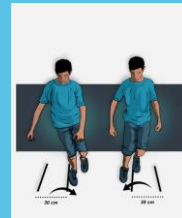
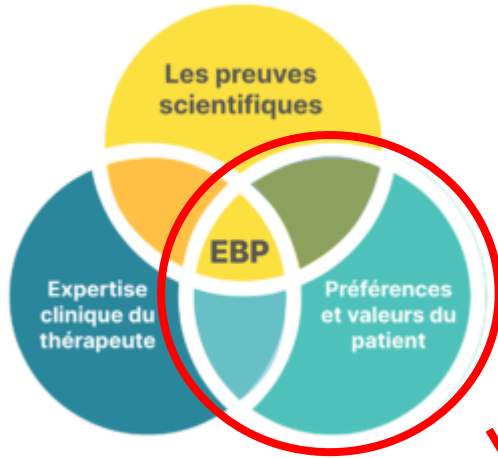


Rééducation des entorses de cheville

chez le patient sportif
et critères de retour au sport



Spécificités de la rééducation de la cheville du sportif?



Récupérer plus vite?



C'est juste une entorse de cheville...



Depuis 2013

69 matchs d'absence cumulée

=

>1 An d'indisponibilité avant son opération

Spécificités de la rééducation de la cheville du sportif?



Praticiens plus experts?



Romain Tourillon, PT, MSc, CMP^{1,2}; Eamonn Delahunt, PT, PhD^{4,5}; François Fourchet, PT, PhD^{1,2,3};

Brice Picot, PT, MSc^{3,6}; Massamba M'Baye, PT, S&C⁷

1 **Ankle scientific knowledge is not translated into physiotherapy practice: a thematic**
2 **analysis of French-speaking physiotherapists' clinical behaviors**

3 **Abstract**

4 **Context:** Chronic ankle instability (CAI) is prevalent amongst individuals who sustain a
5 lateral ankle sprain (LAS) injury. The persistent and characteristic long-standing clinical
6 symptoms of CAI maybe attributable to the lack of adoption of evidence-informed clinical
7 guidelines.

8 **Objective:** To investigate to what extent French-speaking physiotherapists implement the
9 International Ankle Consortium Rehabilitation-Oriented-ASsessment (ROAST) framework
10 when providing clinical care for individuals with an acute LAS injury.

11 **Design:** Cross-sectional study.

12 **Setting:** We created an online survey informed by a Delphi process of foot-ankle experts, and
13 disseminated it to French-speaking physiotherapists in France, Switzerland, Quebec-Canada,
14 Belgium, and Luxembourg.



Journées Francophones de Kinésithérapie, 29 Mars – 02 Avril 2023

**Sommes-nous prêts à l'accès direct sur l'entorse de cheville ? Un
questionnaire international sur 426 physiothérapeutes francophones**

Romain Tourillon, PT, MSc, CMP^{1,2}; Eamonn Delahunt, PT, PhD^{3,4}; François Fourchet, PT,
PhD^{1,5}; Brice Picot, PT, MSc^{5,6,7}; Massamba M'Baye, PT, S&C⁸



Évaluation des connaissances des kinésithérapeutes francophones sur la prise en charge de l'entorse de cheville et sur l'instabilité chronique.

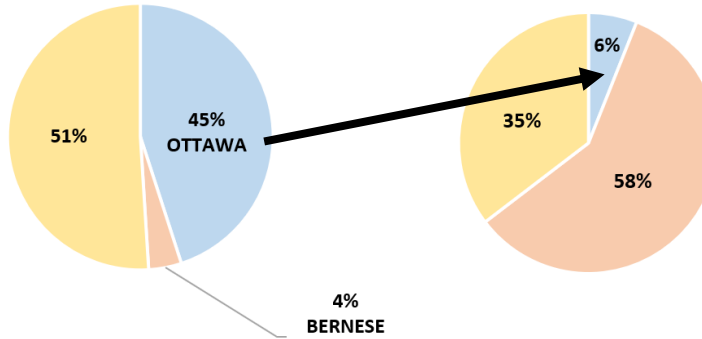
Présentation du projet et des objectifs de l'enquête.



APPLICATION (n=426)

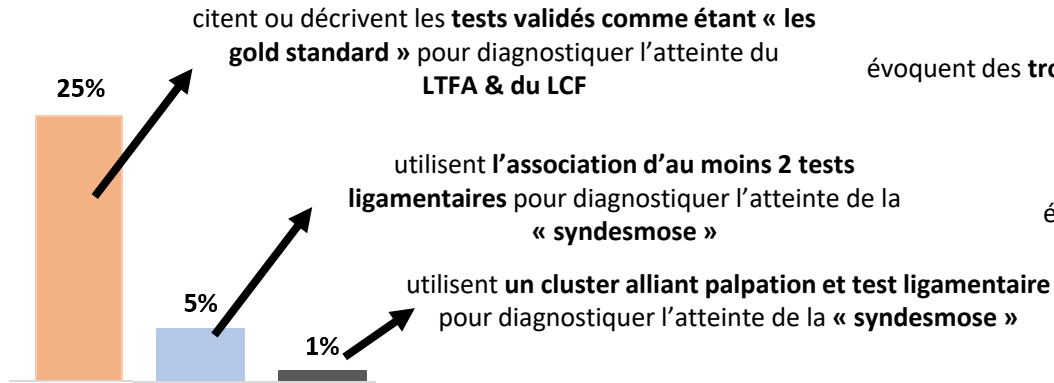


Partie 1 : Bilan des lésions osseuses

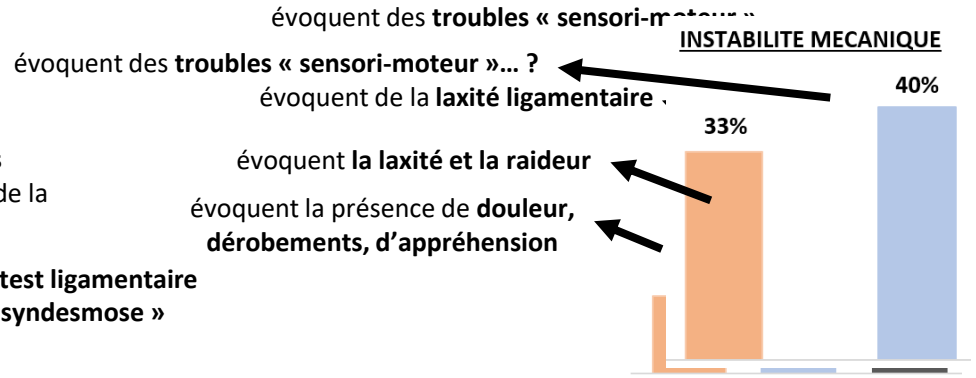


25% ont répondu correctement à au moins une question sur l'utilisation des critères d'Ottawa lors de cas clinique

Partie 2 : Bilan des lésions ligamentaires



Partie 3 : Définition de l'instabilité chronique de cheville



Assessments Used by Athletic Trainers to Decide Return-to-Activity Readiness in Patients With an Ankle Sprain

Ryan S. McCann, PhD, ATC, CSCS*; Cailee E. Welch Bacon, PhD, ATC†; Ashley M. B. Suttmilller, PhD, ATC‡; Phillip A. Gribble, PhD, ATCS‡; Julie M. Cavallario, PhD, ATC*

*Rehabilitation Sciences, Old Dominion University, Norfolk, VA; †Department of Interdisciplinary Health Sciences, Arizona School of Health Sciences, A.T. Still University, Mesa; ‡Atlantic Orthopaedic Specialists, Virginia Beach; §Athletic Training and Clinical Nutrition, University of Kentucky, Lexington

Context: Athletic trainers (ATs) often care for patients with ankle sprains. Expert consensus has been established for rehabilitation-oriented assessments (ROASTs) that should be included in ankle-sprain evaluations. However, the methods ATs use to determine return-to-activity readiness after an ankle sprain are unknown.

Objectives: To identify ATs' methods for determining patients' return-to-activity readiness after an ankle sprain and demographic characteristics of the ATs and their methods.

Setting: Online survey.

Design: Cross-sectional study.

Patients or Other Participants: We recruited 10 000 clinically practicing ATs. A total of 676 accessed the survey, 574 submitted responses (85% completion rate), and 541 respondents met the inclusion criteria.

Main Outcome Measure(s): We distributed an online survey to ATs that asked about their assessment of pain, swelling, range of motion, arthrokinematics, strength, balance, gait, functional capacity, physical activity level, and patient-reported outcomes in deciding return to activity. Descriptive statistics were used to characterize participant demographics and frequencies of the assessment

measures used by ATs. Chi-square analysis was conducted to identify relationships between the demographics and assessment selection.

Results: Pain, swelling, range of motion, strength, balance, gait, and functional capacity were assessed by 76.2% to 96.7% of ATs. Arthrokinematics, physical activity level, and patient-reported outcomes were assessed by 25.3% to 35.1% of participants. When selecting specific assessment methods, ATs often did not use recommended ROASTs. Athletic trainers with higher degrees, completion of more advanced educational programs, employment in nontraditional settings, more clinical experience, and familiarity with expert consensus recommendations were more likely to use ROASTs.

Conclusions: Before approving return to activity for patients with ankle sprains, ATs did not use some recommended outcomes and assessment methods. Practice in nontraditional settings, more advanced degrees, more clinical experience, and familiarity with expert consensus guidelines appeared to facilitate the use of ROASTs.

Key Words: rehabilitation-oriented assessment, clinician-rated assessment, functional assessment, patient-rated outcomes

Key Points

- Many athletic trainers can continue to improve their return-to-activity decisions for patients with ankle sprains by adopting expert-recommended assessment methods.
- Athletic trainers in nontraditional settings and with more education, more clinical experience, and familiarity with expert consensus guidelines were more likely to use recommended assessments to determine the return-to-activity readiness of patients with ankle sprains.

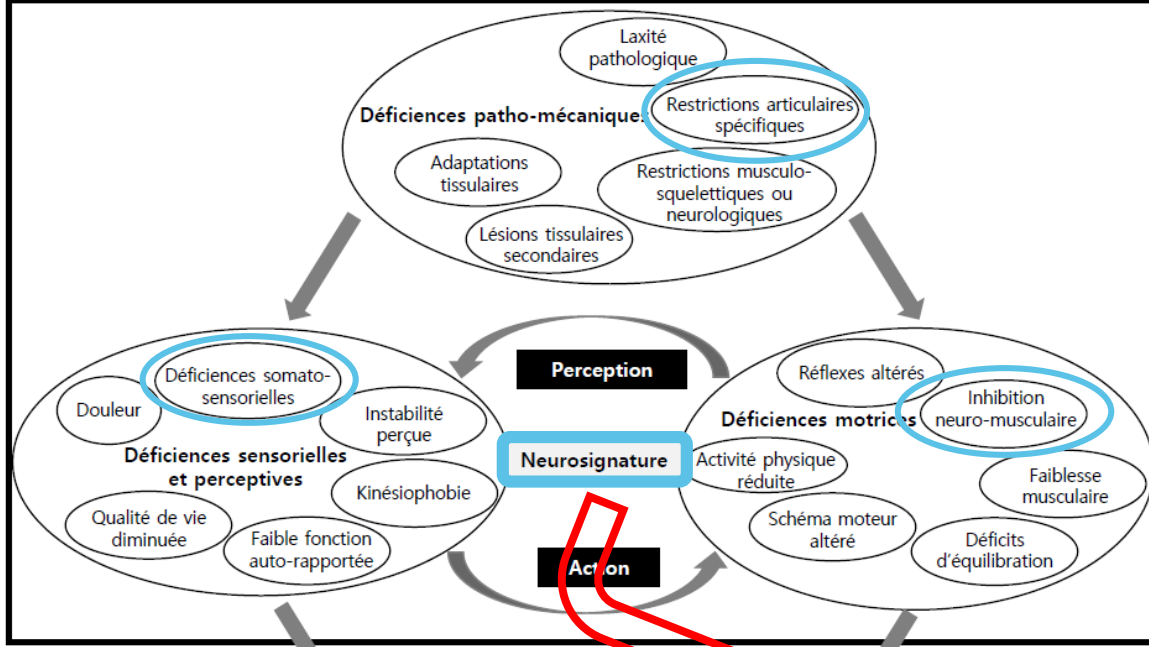
- La douleur, l'oedème, l'amplitude articulaire, la force, l'équilibre, la marche et la capacité fonctionnelle ont été évalués par **76 % à 96 %** des ATrainers.
- L'arthrocinématique, le niveau d'activité physique et les PROMs ont été évalués par **25,3 % à 35,1 %** des participants.
- **Lors de la sélection des méthodes d'évaluation spécifiques, les ATrainers n'utilisaient pas le ROAST recommandé.**
- Les ATrainers ayant des diplômes plus élevés, ayant suivi des programmes de formation plus avancés, ou une plus grande expérience clinique et la connaissance des recommandations de consensus d'experts étaient plus susceptibles d'utiliser les ROAST.

**Peu ou pas de critères objectifs
=> basé sur le temps...**

ENTORSE DE CHEVILLE
Lésions tissulaires initiales
LTFA, LCF

Il faut mesurer les déficits!

FACTEURS PROPRES AU PATIENT



Instabilité Chronique de Cheville

RÉSULTAT

Bon Répondeur

Entorses de cheville récidivantes

Episodes de dérobolement fréquents

Episodes de dérobolement occasionnels

Asymptomatique, avec changement d'activité

Récupération complète

ROAST (2019) : Rehabilitation Oriented ASsessment



Consensus statement

Clinical assessment of acute lateral ankle sprain injuries (ROAST): 2019 consensus statement and recommendations of the International Ankle Consortium

Eamonn Delahunt,^{1,2} Chris M Bleakley,³ Daniela S Bossard,^{1,2} Brian M Caulfield,^{1,4} Carrie L Docherty,⁵ Cailbhe Doherty,⁴ François Fourchet,⁶ Daniel T Fong,⁷ Jay Hertel,⁸ Claire E Hiller,⁹ Thomas W Kaminski,¹⁰ Patrick O McKeon,¹¹ Kathryn M Refshauge,⁹ Alexandria Remus,⁴ Evert Verhagen,¹² Bill T Vicenzino,¹³ Erik A Wikstrom,¹⁴ Phillip A Gribble¹⁵

- Evaluer et quantifier les déficits contribuant à la cascade : entorse – récidence – **ICC** – arthrose
- Permettre d'orienter la rééducation suivant les déficits retrouvés : « rééducation à la carte »

ROAST (2019): 2^{ème} partie

Table 1 International Ankle Consortium ROAST

What clinicians should assess following acute lateral ankle sprain injury

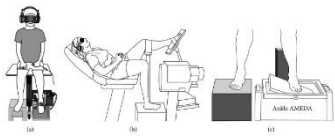
	Why?	How?
Ankle joint pain	Guide progression of exercise-based rehabilitation. Assess the efficacy of treatments implemented.	Numeric rating scale for pain. ³⁵ FADI. ³⁶
Ankle joint swelling	Swelling can cause arthrogenous muscle inhibition. Guide progression of exercise-based rehabilitation. Evaluate the efficacy of treatments implemented.	Figure-of-eight. ³⁸⁻⁴¹
Ankle joint range of motion	High propensity for the development of a dorsiflexion deficit. Impairments in ankle joint range of motion are consistently identified in individuals with CAI.	Weight-bearing lunge test. ⁴⁴⁻⁴⁶
Ankle joint arthrokinematics	Disruption in ankle joint arthrokinematics can result in a dorsiflexion deficit. Impairments in ankle joint arthrokinematics are regularly identified in individuals with CAI.	Posterior talar glide test. ⁴⁸
Ankle joint muscle strength	Impairments in ankle joint strength compromise the functional integrity of the ankle joint. Impairments in ankle joint strength are regularly identified in individuals with CAI.	Hand-held dynamometry. ⁵³
Static postural balance	Impairments in static postural balance are consistently identified in individuals with CAI.	BESS. ⁵⁶ FLT. ⁵⁷
Dynamic postural balance	Impairments in dynamic postural balance are consistently identified in individuals with CAI.	SEBT. ⁵⁸
Gait	Impairments in gait are consistently identified in individuals with CAI.	Visual assessment for antalgic gait.
Physical activity level	Guide the specificity of exercise-based rehabilitation.	Tegner activity-level scale. ⁶³
Ankle joint specific patient-reported outcome measures	Evaluate the efficacy of treatments implemented.	FADI. ³⁶ FAAM. ⁶⁵

BESS, Balance Error Scoring System; CAI, chronic ankle instability; FAAM, Foot and Ankle Ability Measure; FADI, Foot and Ankle Disability Index; FLT, Foot Lift Test; ROAST, Rehabilitation-Oriented AS-sessment; SEBT, Star Excursion Balance Test.

Paramètres à mesurer

Justifications et rapport avec l'ICC

Mesures/Tests les mieux validés dans la littérature



Déficits proprioceptifs

(Munn 2010, Xue 2021-2023)



Altération de l'activité neuromusculaire dynamique

(Suda et al. 2009)



Déficits de contrôle postural

(McKeon et al. 2008, Hertel et al. 2008)



Douleur et oedème

(Delahunt et al. 2018, Hertel et al. 2002)



Faiblesse des éverseurs

(Kobayashi 2016, Terrier et al. 2016)



Altération de la fonction

(Carcia et al. 2005)



Limitation DFROM

(Pope 1998, De Noronha 2006, Kobayashi 2013)



Déficits arthrocinématiques

(Vincenzino 2006, Denagar 2002, Hubbard 2005)

Attention !

Le ROAST n'est qu'un plancher

Certains paramètres n'y figurent pas et doivent être évalués+++

L'acuité proprioceptive



“Une mauvaise position du pied à l’atterrissage est le facteur de risque le plus élevé pour l’entorse de cheville”

JPS flexion plantaire/dorsale



JPS Inversion/éversion



En charge



Amplitude de flexion dorsale

Ankle joint range of motion

High propensity for the development of a dorsiflexion deficit.
Impairments in ankle joint range of motion are consistently identified in individuals with CAI.

Weight-bearing lunge test.⁴⁴⁻⁴⁶

✓ Le **W**eight **B**earing **L**unge **T**est (WBLT)

Mesure de la distance Hallux-mur en position debout

Pied à plat sans décoller le talon.

Pied controlatéral en arrière en position confortable

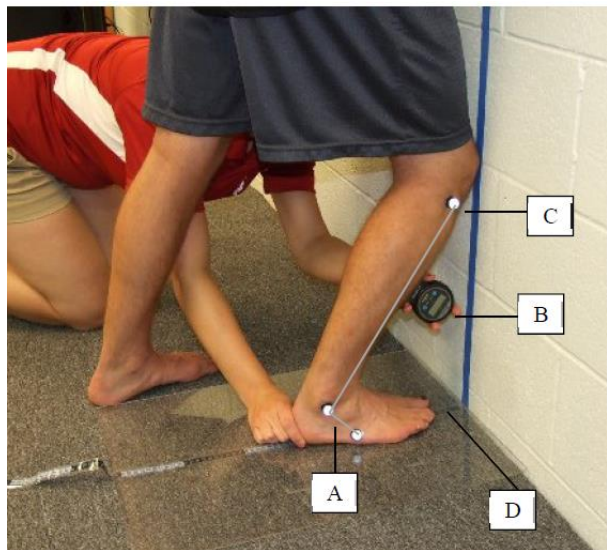
Mains sur le mur.



Evaluer l'amplitude flexion dorsale

Forte corrélation entre analyse 2D ($r>0.70$) et :

- Mesure centimétrique au sol
- Inclinomètre à 15cm en-dessous la TTA
- Inclinomètre sur la TTA



MDC = 4.7° ou 1.9 cm

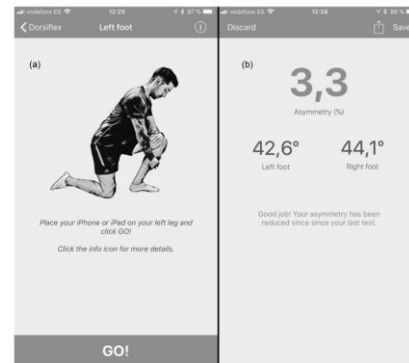
subjects with the most inflexible ankles (**34°** of dorsiflexion range) had nearly **five times the risk of suffering an ankle sprain** as subjects with average flexibility (**45°** of dorsiflexion range).



systematic review

Reliability and minimal detectable change of the weight-bearing lunge test: A systematic review

Cameron J. Powden ^{a,*}, Johanna M. Hoch ^b, Matthew C. Hoch ^b



Retour au sport et entorse de cheville



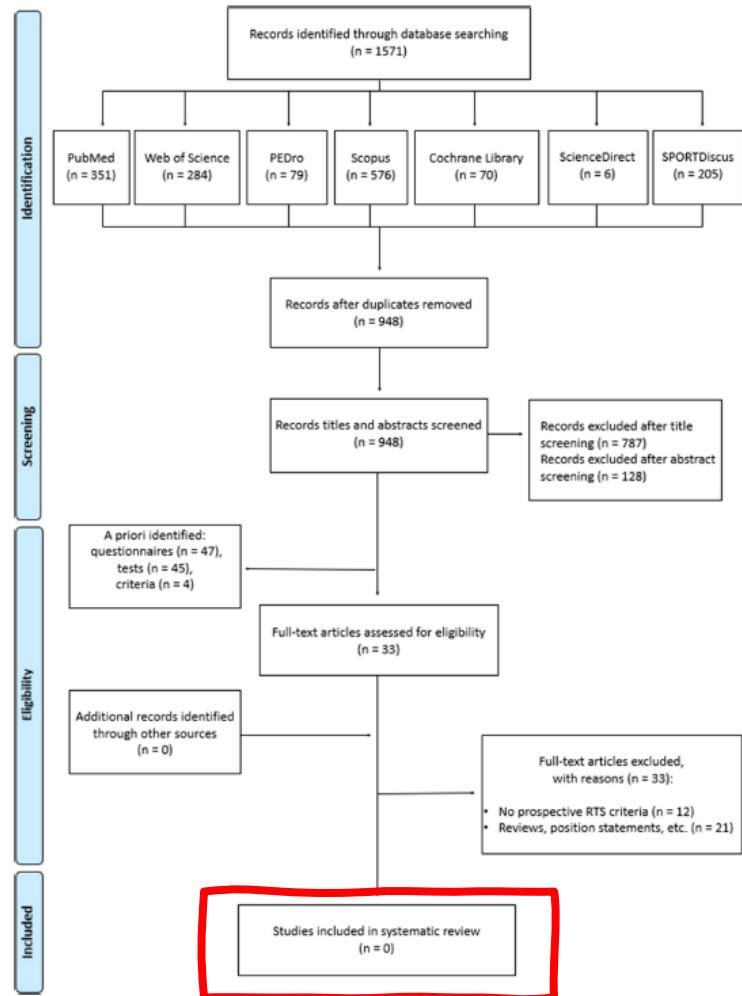
Comment monitorer le retour à l'activité et au sport?

Critères de RTS et entorses de cheville



Pas de preuves dans la littérature pour aider à la prise de décision RTS.

=> RTS: décisions basées sur le temps!



Le P.A.A.S.S

Original research



Return to sport decisions after an acute lateral ankle sprain injury: introducing the PAASS framework—an international multidisciplinary consensus

Michelle D Smith ¹, Bill Vicenzino ¹, Roald Bahr ^{2,3}, Thomas Bandholm ^{4,5}, Rosalyn Cooke ⁶, Luciana De Michelis Mendonça ^{7,8}, François Fourchet ^{9,10}, Philip Glasgow ^{11,12}, Phillip A Gribble ¹³, Lee Herrington ^{6,14}, Claire E Hiller ¹⁵, Sae Yong Lee ^{16,17}, Andrea Macaluso ^{18,19}, Romain Meeusen ²⁰, Oluwatoyosi B A Owwoye ^{21,22}, Duncan Reid ²³, Bruno Tassignon ²⁰, Masafumi Terada ²⁴, Kristian Thorborg ^{25,26}, Evert Verhagen ²⁷, Jo Verschueren ²⁰, Dan Wang ²⁸, Rod Whiteley ^{3,29}, Erik A Wikstrom ³⁰, Eamonn Delahunt ^{31,32}



P

Pain severity

- During sport participation
- Over last 24 hours

A

Ankle impairments

- Ankle range of motion
- Ankle muscle strength, endurance and power

A

Athlete perception

- Perceived ankle confidence/reassurance
- Perceived ankle stability
- Psychological readiness

S

Sensorimotor control

- Proprioception
- Dynamic postural control/balance

S

Sport/functional performance

- Hopping and jumping
- Agility
- Sport-specific activities
- Ability to complete a full training session

“Elle ne précise pas comment les cliniciens doivent évaluer ces éléments. En outre, il n'y a pas de données sur les valeurs seuils indiquant si un athlète devrait ou non faire reprendre”.



Which Functional Tests and Self-Reported Questionnaires Can Help Clinicians Make Valid Return to Sport Decisions in Patients With Chronic Ankle Instability? A Narrative Review and Expert Opinion

Brice Picot^{1,2,3*}, Alexandre Hardy⁴, Romain Terrier^{2,3,5}, Bruno Tassinon⁶, Florio Lopes⁷ and François Fourchet^{2,8}

¹French Handball Federation, Crest, France, ²French Society of Sports Physical Therapist (FSMKS Lab), Montpellier, France, ³Inter-University Laboratory of Human Movement Biology (IUMB), Savoie Mont Blanc University, Chambéry, France, ⁴Clinique du Sport Flavi, Paris, France, ⁵SAVU, Wimbaix, Savoie Technolab, BP 802103, La Motte-Sarvolat, France, ⁶Human Physiology and Sports Physiotherapy Research Group, Faculty of Physical Education and Physiotherapy, Vrije Universiteit Brussel, Brussels, Belgium, ⁷Santa Adalberto, Flac Chavila Naranjo Atletismo, Mexico, France, ⁸Medion Analysis Lab, Physiotherapy Department, La Tour Hospital, Swiss Olympic Medical Center, Meyrin, Switzerland

OPEN ACCESS

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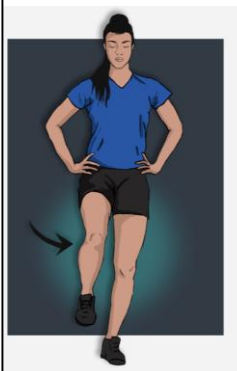
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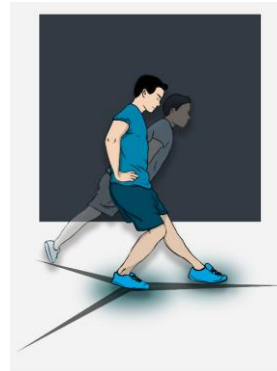
Citation:

Picot B, Hardy A, Terrier R, Tassinon B, Lopes F and Fourchet F (2022) Which Functional Tests and Self-Reported Questionnaires Can Help Clinicians Make Valid Return to Sport Decisions in Patients With Chronic Ankle Instability? A Narrative Review and Expert Opinion. *Front. Sports Act. Living* 4:902890. doi: 10.3389/fspor.2022.902890

Single Leg Stance (firm)



mSEBT



Side Hop Test

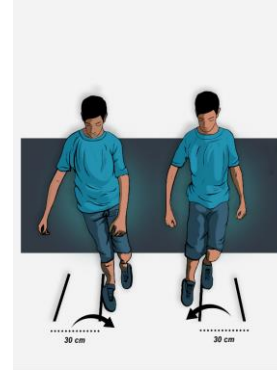
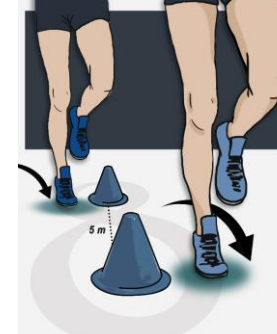


Figure of Eight



R. LOPES



F. FOURCHET



A. HARDY



Lateral ankle sprain is the most common injury in sports, with up to 40% of patients developing chronic ankle instability (CAI). One possible cause underlying this high rate of recurrence or feeling of giving way may be a premature return to sport (RTS). Indeed, except for time-based parameters, there are no specific criteria to guide clinicians in their RTS decisions in patients with CAI. A recent international consensus highlighted the relevance and importance of including patient-reported ankle function questionnaires combined with functional tests targeting ankle impairments in this population. Thus, the aim of this narrative review and expert opinion was to identify the most relevant functional performance tests and self-reported questionnaires to help clinicians in their RTS decision-making process following recurrent ankle sprains or surgical ankle stabilization. The PubMed (MEDLINE), PEDro, Cochrane Library and ScienceDirect databases were searched to identify published articles. Results showed that the single leg stance test on firm surfaces, the modified version of the star excursion balance test, the side hop test and the figure-of-8 test appeared to be the most relevant functional performance tests to target ankle impairments in patients with CAI. A combination of the Foot and Ankle Ability Measure (FAAM) and the Ankle Ligament Reconstruction-Return to Sport after Injury (ALR-RSI) questionnaires were the most relevant self-reported questionnaires to assess patient function in the context of CAI. Although these functional tests and questionnaires provide a solid foundation for clinicians to validate their RTS decisions in patient with CAI, objective scientific criteria with cut-off scores are still lacking. In addition to the proposed test cluster, an analysis of the context, in particular characteristics related to sports (e.g., fatigue, cognitive constraints), to obtain more information about the patient's risk of recurrent injury could be of added value when making a RTS decision in patients

Les questionnaires PROMs

frontiers | Frontiers in Sports and Active Living | published: 20 May 2022 | doi: 10.3389/fspor.2022.902086

Which Functional Tests and Self-Reported Questionnaires Can Help Clinicians Make Valid Return to Sport Decisions in Patients With Chronic Ankle Instability? A Narrative Review and Expert Opinion

Brica Picot^{1,2,3*}, Alexandra Hardy⁴, Romain Terrier^{5,6,7}, Bruno Tassinon⁸, Ronny Lopes⁹ and François Fourchet¹⁰

OPEN ACCESS

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 ALR-RSI scale

Please answer the following questions referring to your main sport prior to injury. For each question, tick a box / between the two descriptions to indicate how you feel right now relative to the two extremes.

 Foot and Ankle Ability Measure (FAAM) Activities of Daily Living Subscale

Please Answer **every question** with **one response** that most closely describes your condition within the past week.
If the activity in question is limited by something other than your foot or ankle mark "Not Applicable" (N/A).

No Difficulty	Slight Difficulty	Moderate Difficulty	Extreme Difficulty	Unable to do	N/A
---------------	-------------------	---------------------	--------------------	--------------	-----



	TESTS		RAW VALUES	POINTS	MAXIMUM SCORE
FUNCTIONAL PERFORMANCE TESTING	Single leg stance test		> 3 errors	0	3
			1 - 3 errors	1	
			0 error	2	
			No apprehension	+1	
	Star excursion balance test (SEBT)		< 90%	0	7
			90 - 95%	2	
			> 95%	4	
			Anterior (ANT) > 60 %	+1	
			Posteromedial (PM) > 90 %	+1	
			No apprehension	+1	
	Side hop test		> 13 s	0	5
			10 - 13 s	2	
			< 10 s	4	
			No apprehension	+1	
	Figure-of-8 hop test		> 18 s	0	3
			13 - 18 s	1	
		< 13 s	2		
		No apprehension	+1		
PATIENT REPORTED OUTCOME MEASURE	Foot and Ankle Ability Measure (FAAM)	Activities of Daily Living	< 90 %	0	2
			90 – 95 %	1	
			> 95 %	2	
		Sport	< 80 %	0	2
			80 – 95 %	1	
			> 95 %	2	
	Ankle ligament reconstruction-return to sport after injury (ALR-RSI)		< 55 %	0	3
			55-63 %	1	
			63 – 76 %	2	
			> 76 %	3	
Ankle-GO					25

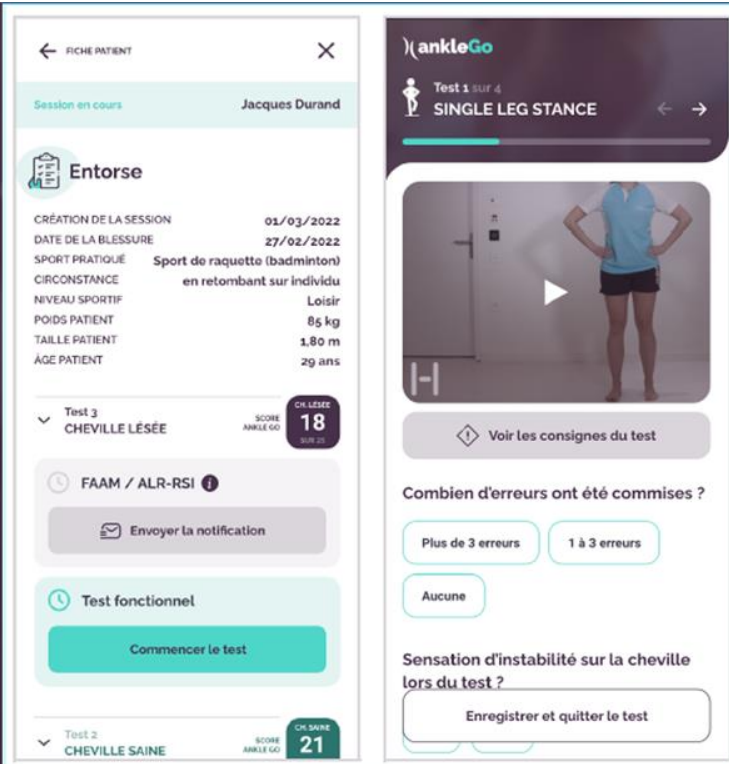
La première application pour le retour au sport après traumatisme de cheville!



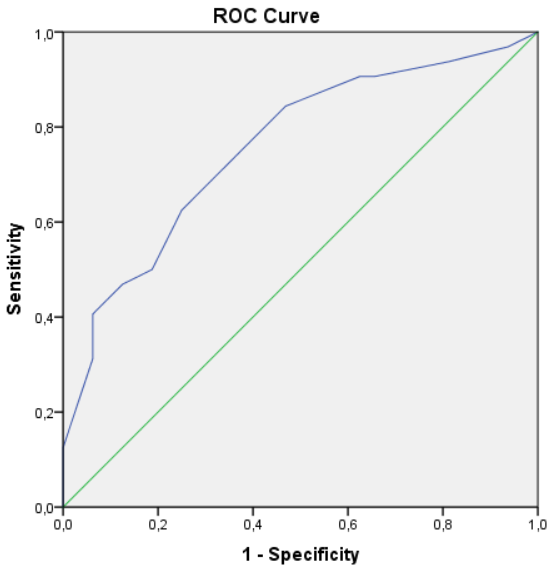
APPLICATION GRATUITE

<https://anklego.com/login>

Créée par: Dr Ronny Lopes, Dr Alexandre Hardy, Mr Brice Picot, Mr François Fourchet



- ✓ 4 tests et 2 questionnaires
- ✓ Basée sur les données scientifiques (Picot et al. 2022, 2023)



*Two-month, Ankle-GO score showed a good predictive ability for a return to preinjury level at **4 months** (AUC=0.77 ;95%CI : 0.64-0.88 ; p<.001).*

*A Youden index of 0.38 was observed at a score of **8 points** corresponding to a sensitivity of 72% and specificity of 66%.*



X 5



Ankle-GO < 8 points



X 9



Females



X 4

Confusion matrix

Observed	Predicted		% Correct
	non	oui	
non	30	6	83.333
oui	6	12	66.667
Overall % Correct			77.778

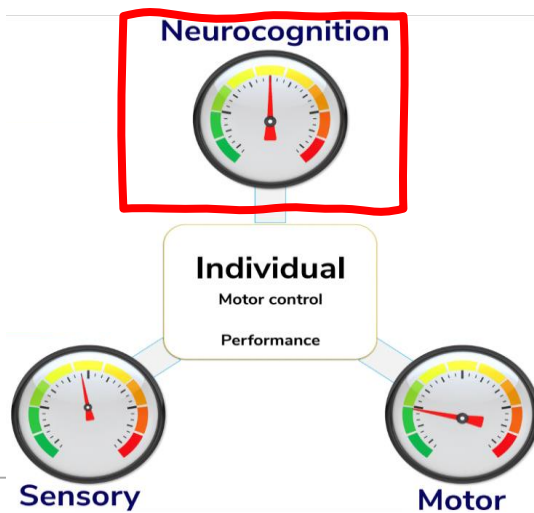
Note. The cut-off value is set to 0.5

Model	Parameter	Estimate	Standard Error	Standardized*	Odds Ratio	z	Wald Test			95% Confidence interval (odds ratio scale)	
							Wald Statistic	df	p	Lower bound	Upper bound
1	(Intercept)	-0.693	0.289	-0.693	0.500	-2.401	5.765	1	0.016	0.284	0.880
2	(Intercept)	-2.037	0.614	-2.037	0.130	-3.318	11.011	1	< .001	0.039	0.434
	ANKLEGOM2>8 (non)	2.180	0.721	2.180	8.846	3.022	9.132	1	0.003	2.151	36.374
3	(Intercept)	-2.865	0.822	-2.865	0.057	-3.485	12.145	1	< .001	0.011	0.285
	ANKLEGOM2>8 (non)	2.157	0.744	2.157	8.644	2.897	8.394	1	0.004	2.009	37.187
	sexe (Female)	1.328	0.720	1.328	3.772	1.843	3.396	1	0.065	0.919	15.483

Note. Avez-vous eu des récidives d'entorses de cheville depuis (traumatisme avec douleur/gonflement qui vous empêche de poursuivre votre activité) ? level 'oui' coded as class 1.

* Standardized estimates represent estimates where the continuous predictors are standardized (X-standardization).

vert bleu jaune rouge vert
bleu rouge jaune vert bleu
rouge jaune vert rouge bleu



Conclusions

- «Idem sédentaires» ... mais «plus de tout»
- Les Références restent:
 - Diagramme de Hertel
 - ROAST... et plus
 - PAASS .. et l'Ankle-GO
 - ... et le terrain+++

Avec neurocognitif et lutte contre la repondération visuelle

4-5
Octobre
October
2024

FRANCE
Strasbourg

INTERNATIONAL ANKLE SYMPOSIUM
2024
RESEARCH \blacktriangleleft IMPACT \blacktriangleright PRACTICE

LA TOUR INTERNATIONAL
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